PHILIPS 21HT3352/61P

MODEL

SERVICE MANUAL

Service
Service
Service

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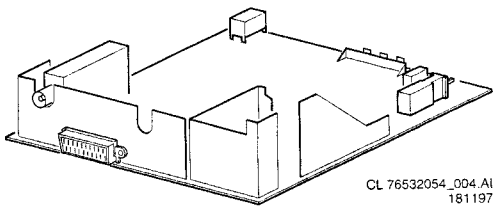

ServiceManual

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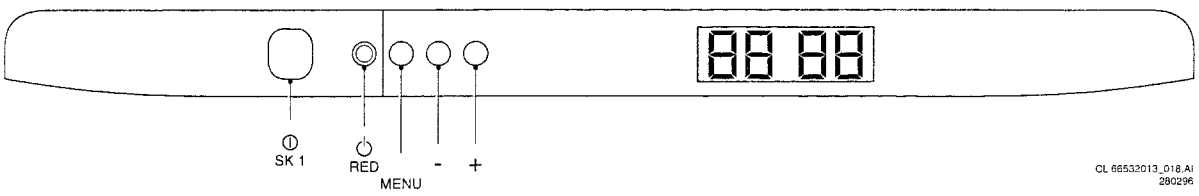
1. Technical specifications

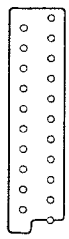
Mains voltage	: 220 - 240 V ± 10% AC; 50 Hz ± 5%	Indications	: On Screen Display (OSD) green/red
Power cons. at 220V~	: 14" 43 W (stand-by ≤ 6 W)		: 1 LED (⏻ red for stand-by, ⏻ green for TV-on, blinking red for "RC5" and error code)
	: 17" 45 W (stand-by ≤ 6 W)		
	: 21" 63 W (stand-by ≤ 6 W)		
Aerial input impedance TV	: 75Ω - coax		
Min. aerial input VHF	: 30µV		
Min. aerial input UHF	: 40µV	VCR programs	: 0
Max. aerial input VHF/UHF	: 180mV		
Pull-in range colour sync	: ± 300Hz	Tuning and operating system	: ▭ PLL
Pull-in range horizontal sync	: ± 600Hz		
Pull-in range vertical sync	: ± 5Hz	UV916E / IEC (PLL)	: VHFa: 48 - 118 MHz
			: VHFb: 118 - 300 MHz
Picture tube range	: 14",17", 21"		: Hyper: 300 - 470 MHz
	: 1 W mono execution: 4" full range round 25Ω 2W		: UHF: 470 - 861 MHz
		U944 / IEC (PLL)	: UHF: 470 - 861 MHz
	: 3 W mono execution: 4" woofer round 16Ω 3W 1" tweeter round 16Ω 3W		
TV Systems	: PAL I		
	: PAL BG		
	: PAL BG / SECAM BGDK		
	: PAL BG / SECAM BGLL'		

Local operating functions



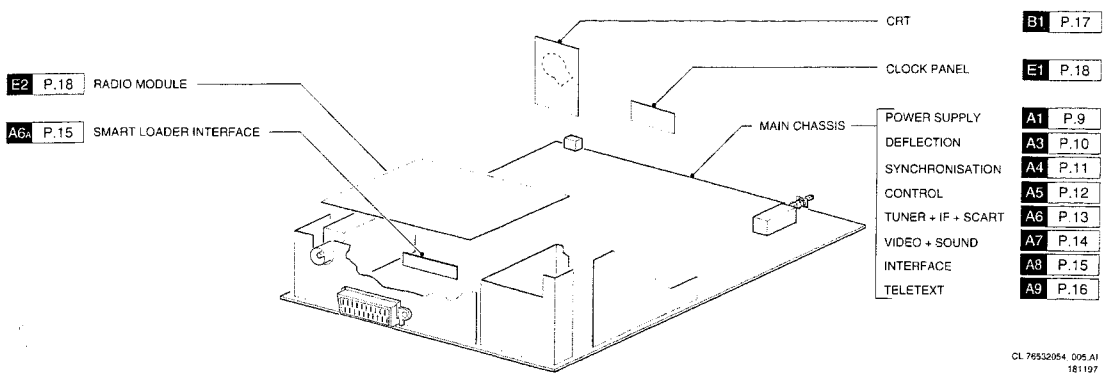
2. Connection facilities

Euroconnector:



1 - Audio ⊖ R (0V5 RMS ≤ 1kΩ)
2 - Audio ⊕ R (0V2 - 2V RMS ≥ 10kΩ)
3 - Audio ⊖ L (0V5 RMS ≤ 1kΩ)
4 - Audio ⊥
5 - Blue ⊥
6 - Audio ⊕ L (0V2 - 2V RMS ≥ 10kW)
7 - Blue (0V7pp/75W)
8 - CVBS-status 1 ⊕ (0-2V int., 10-12V ext.)
9 - Green ⊥
10 - SDA to smart-loader
11 - Green ($0V7_{pp}/75\Omega$)
12 - SCL to smart-loader
13 - Red ⊥
14 - +5SI to smart-loader
15 - Red ($0V7_{pp}/75\Omega$)
16 - RGB-status (0-0V4 int.)(1-3V ext. 75Ω)
17 - CVBS ⊥
18 - CVBS ⊥
19 - CVBS ⊖ ($1V_{pp}/75\Omega$)
20 - CVBS ⊕ ($1V_{pp}/75\Omega$)
21 - Earthscreen

Location of panels



3. Safety instructions, Maintenance instructions, Warnings and Notes

Safety instructions for repairs

1. Safety regulations require that during a repair:
- The set should be connected to the mains via an isolating transformer;
- Safety components, indicated by the symbol ", should be replaced by components identical to the original ones;
- When replacing the CRT, safety goggles must be worn.

2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points:
- As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
  - all pins of the line output transformer (LOT);
  - fly-back capacitor(s);
  - S-correction capacitor(s);
  - line output transistor;
  - pins of the connector with wires to the deflection coil;
  - other components through which the deflection current flows.

Note:
This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.
- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply). This check can be done as follows:
  - unplug the mains cord and connect a wire between the two pins of the mains plug;
  - set the mains switch to the on position (keep the mains cord unplugged!);
  - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ;
  - switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

Maintenance instructions

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:
- When the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years.
- When the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.

The maintenance inspection contains the following actions:
- Execute the above mentioned 'general repair instruction'.
- Clean the power supply and deflection circuitry on the chassis.
- Clean the picture tube panel and the neck of the picture tube.

Warnings

1. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).

2. **ESD**
All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

Available ESD protection equipment:

anti-static table mat; large 1200x650x1.25mm	4822 466 10953
anti-static table mat; small 600x650x1.25mm	4822 466 10958
anti-static wristband connection box	4822 395 10223
(3 press stud connections, 1 MΩ)	4822 320 11307
extension cable (2 m, 2 MΩ; to connect wristband to connection box)	4822 320 11305
connecting cable (3 m, 2 MΩ; to connect table mat to connection box)	4822 320 11306
earth cable (1 MΩ; to connect any product to mat or connection box)	4822 320 11308
complete kit ESD3 (combining all 6 prior products; small table mat)	4822 310 10671
wristband tester	4822 344 13999

3. Together with the deflection unit and any multipole unit, the flat square picture tubes used from an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.

4. Be careful during measurements in the high-voltage section and on the picture tube.

5. Never replace modules or other components while the unit is switched on.

6. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth (⊥), or hot earth (⊥ϟ) as this is called.

2. The direct voltages and oscillograms shown in the diagrams are indicative and should be measured in the **Service Default Mode** (see chapter 6) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.

3. Where necessary, the oscillograms and direct voltages are measured with (⊤) and without aerial signal (⊁). Voltages in the power supply section are measured both for normal operation (⏻) and in standby (⏾). These values are indicated by means of the appropriate symbols.

4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

6. Manufactured under license from Dolby Laboratories Licensing Corporation.
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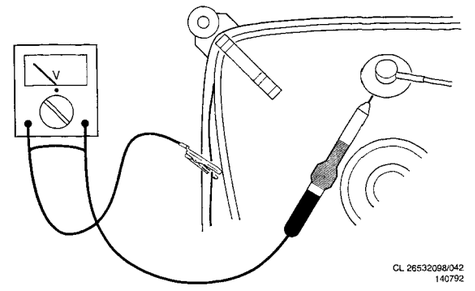


Fig. 3.1

4. Mechanical instructions

For the main carrier two service positions are possible (Fig. 4.1):

A: For faultfinding on the component side of the main carrier.
B: For (de)soldering activities on the copper side of the main carrier.

Position A can be reached by first removing the mains cord from it's fixation, then loosen the carrier lips (1) and then pulling the carrier panel (2) for approximately 10 cm.

Position B can be reached from position A after disconnecting the degaussing cable.

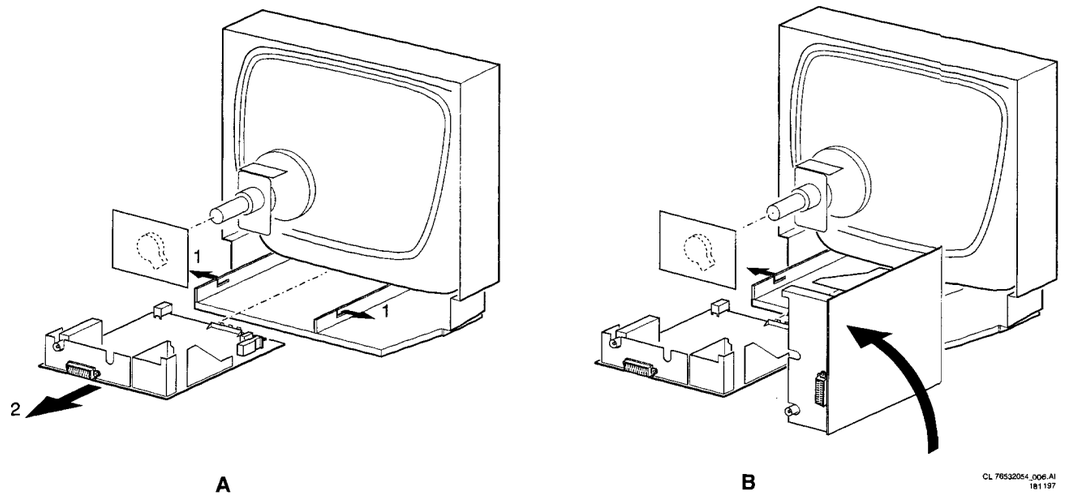
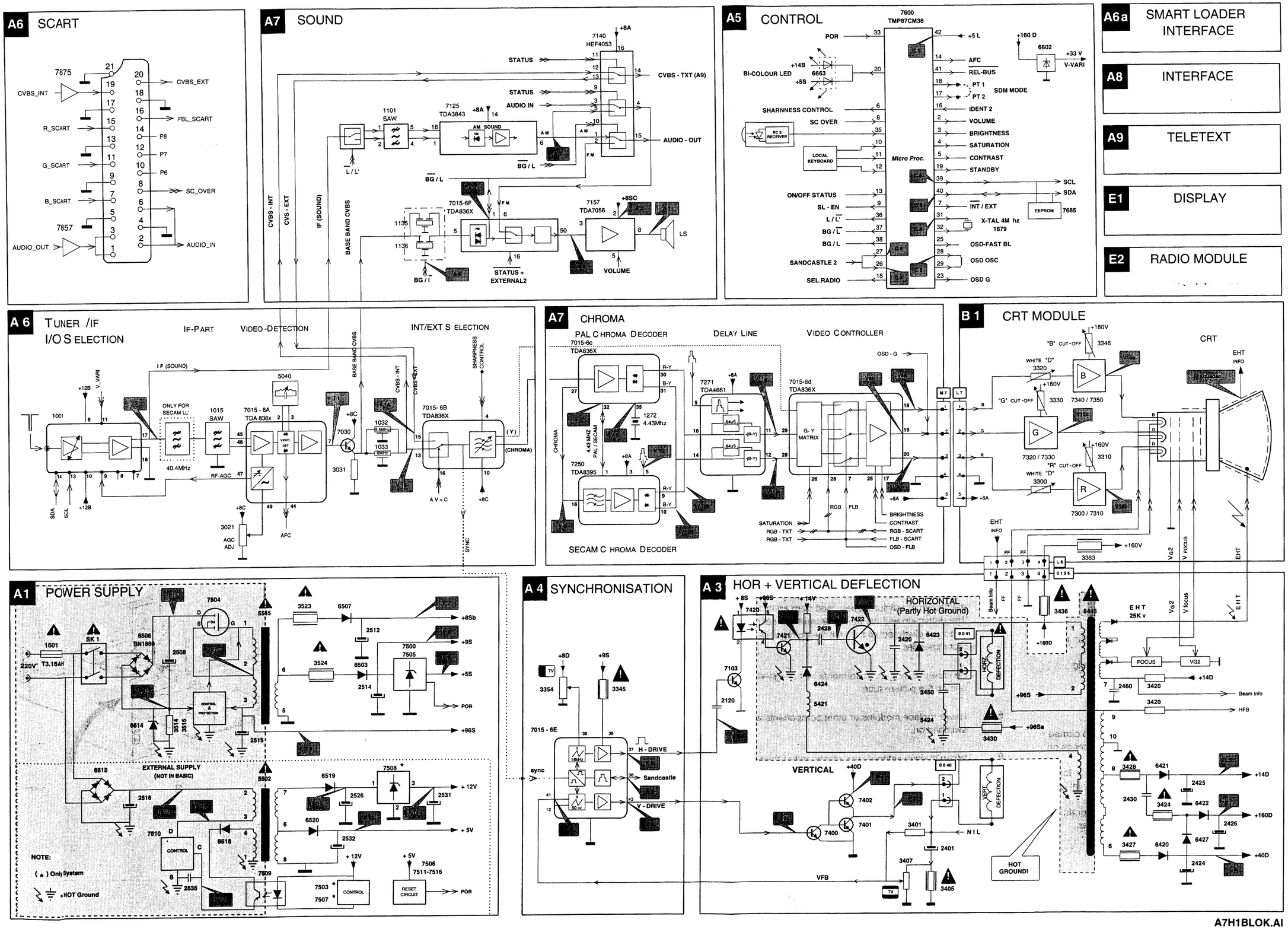


Fig. 4.1

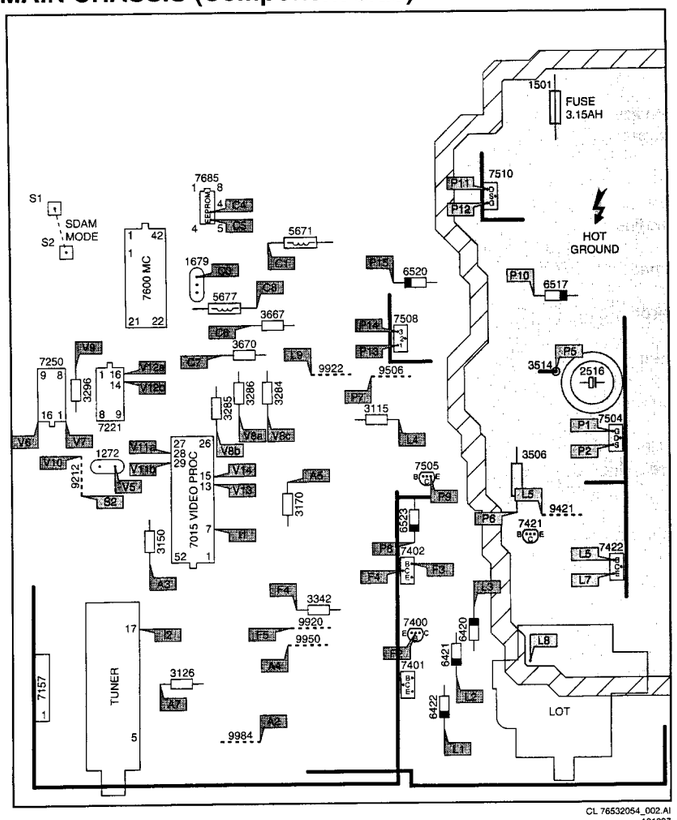
5. Block diagram / Blockschaltbild / Schéma-bloc Chassis A7H.1 4

Block diagram / Blockschaltbild / Schéma-bloc

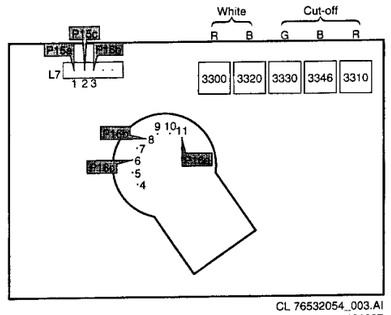


Survey of testpoints / Ubersicht über die

MAIN CHASSIS (Component side)



CRT PANEL (Track side)



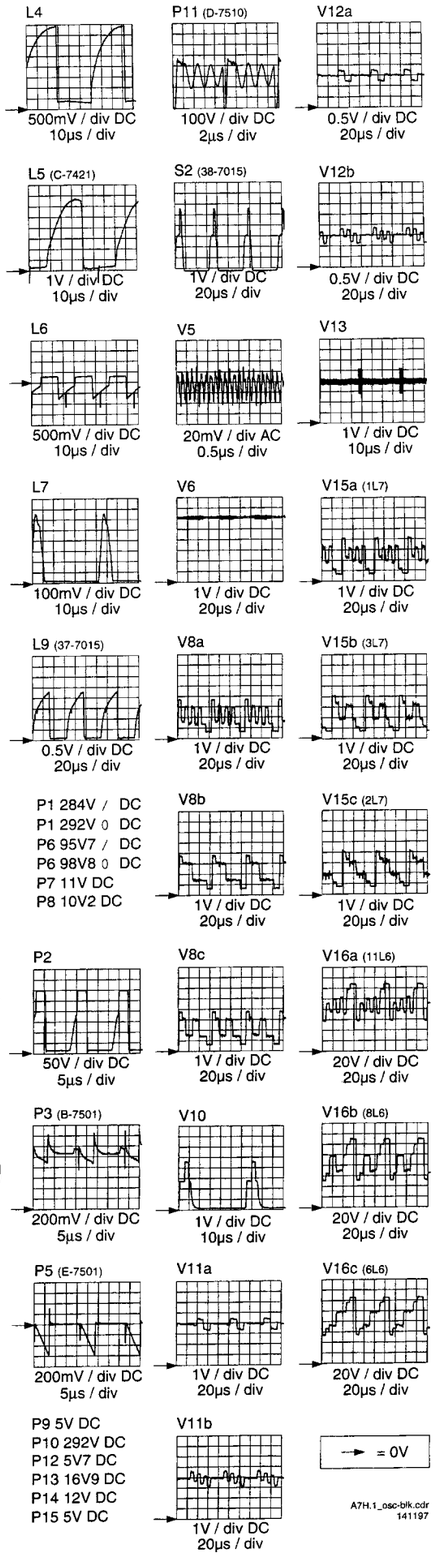
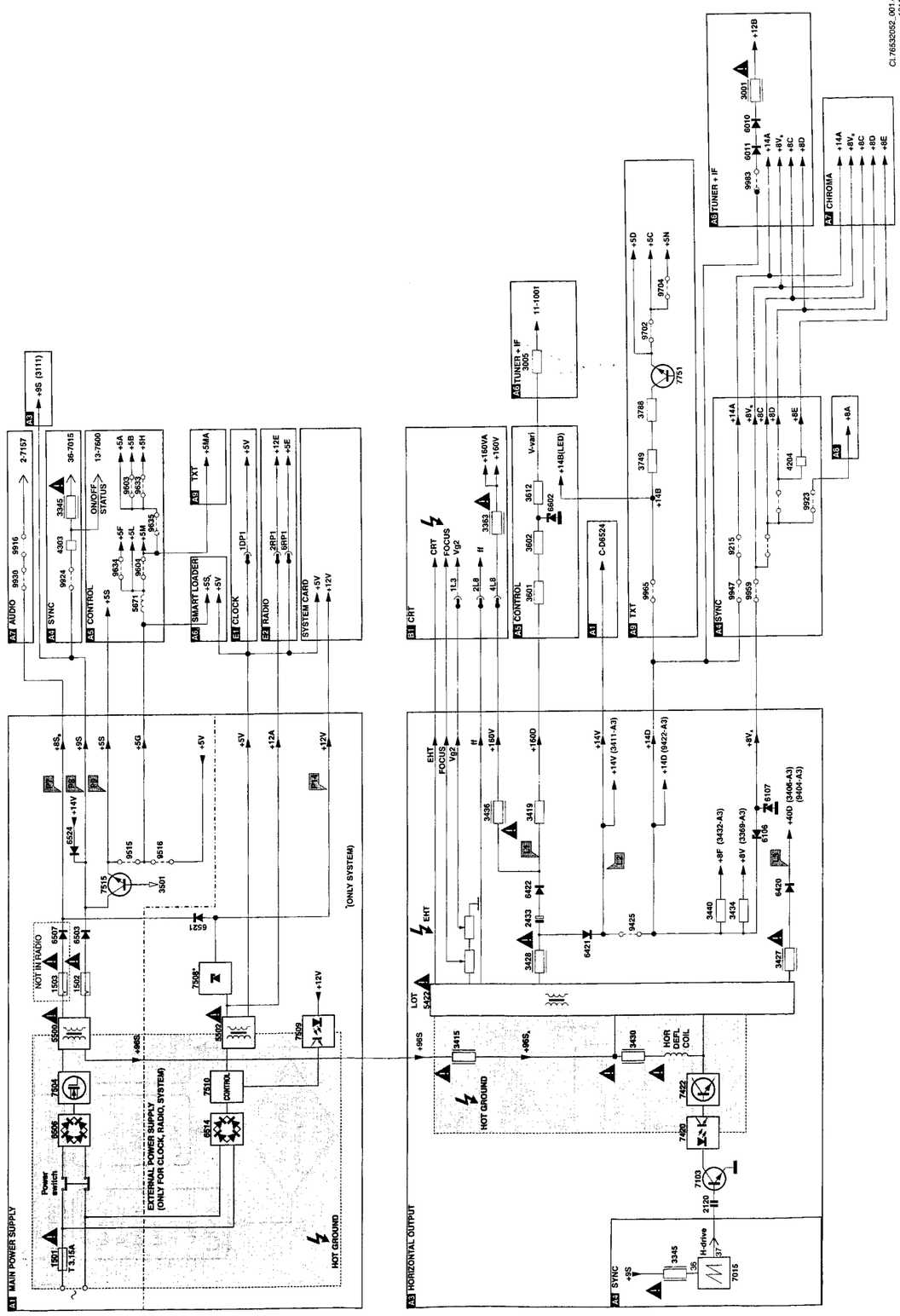
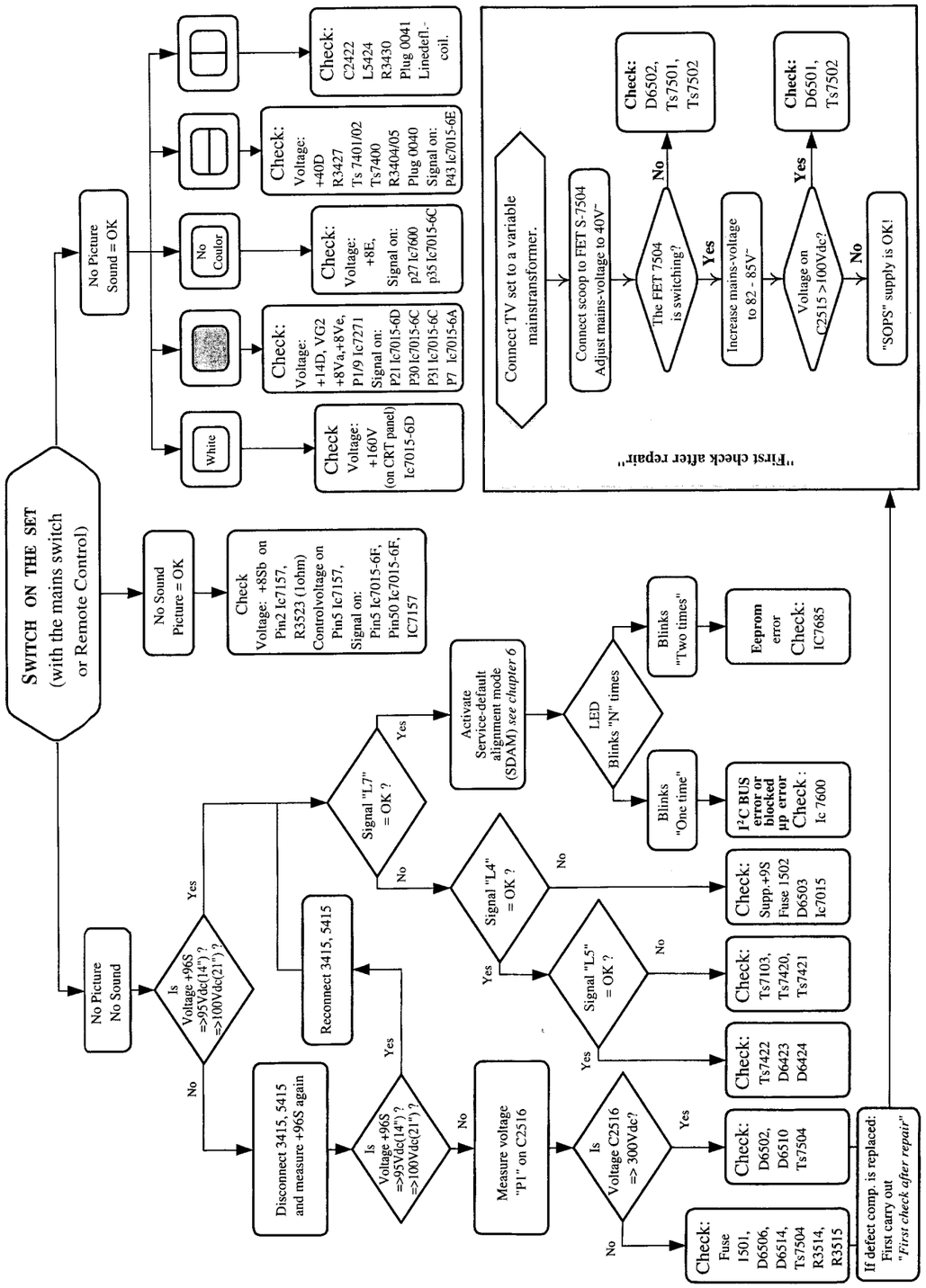


Diagram supply voltages survey / Blockschaltbild
Speisespannungen / Schéma-bloc tension d'alimentation



6. Fault finding tree & Repair facilities / Fehlersuchbaum & Reparaturhinweise / Aide au depannage & Conseils pour la réparations


SWITCH ON THE SET (with the mains switch or Remote Control)
No Picture No Sound
No Sound Picture = OK
Check Voltage: +8Sb on Pin2 Ic7157, R3523 (1ohm) Controlvoltage on Pin5 Ic7157, Signal on: Pin5 Ic7015-6F, Pin50 Ic7015-6F, IC7157
Is Voltage +96S =>95Vdc(14") ? =>100Vdc(21") ?
Yes
No
Disconnect 3415, 5415 and measure +96S again
Reconnect 3415, 5415
Is Voltage +96S =>95Vdc(14") ? =>100Vdc(21") ?
Yes
No
Measure voltage "P1" on C2516
Is Voltage C2516 => 300Vdc?
Yes
No
Check: Fuse 1501, D6506, D6514, Ts7504 R3514, R3515
Check: D6502, D6510 Ts7504
If defect comp. is replaced: First carry out "First check after repair"
Signal "L7" = OK ?
Yes
No
Activate Service-default alignment mode (SDAM) see chapter 6
LED Blinks "N" times
Blinks "Two times"
Eeprom error Check: IC7685
Blinks "One time"
I²C BUS error or blocked µp error Check: Ic 7600
Signal "L4" = OK ?
Yes
No
Check: Supp.+9S Fuse 1502 D6503 Ic7015
Signal "L5" = OK ?
Yes
No
Check: Ts7103, Ts7420, Ts7421
Check: Ts7422 D6423 D6424
"First check after repair"
Connect TV set to a variable mainstransformer.
Connect scoop to FET S-7504 Adjust mains-voltage to 40V⁻
The FET 7504 is switching?
No
Yes
Check: D6502, Ts7501, Ts7502
Increase mains-voltage to 82 - 85V⁻
Voltage on C2515 >100Vdc?
Yes
No
Check: D6501, Ts7502
"SOPS" supply is OK!
No Picture Sound = OK
No Coulor
Check: Voltage: +8E, Signal on: p27 Ic7600 p35 Ic7015-6C
Check: Voltage: +40D R3427 Ts 7401/02 Ts7400 R3404/05 Plug 0040 Signal on: P43 Ic7015-6E
Check: C2422 L5424 R3430 Plug 0041 Linedefl.-coil.
White
Check: Voltage: +14D, VG2 +8Va,+8Ve, P1/9 Ic7271 Signal on: P21 Ic7015-6D P30 Ic7015-6C P31 Ic7015-6C P7 Ic7015-6A
Check Voltage: +160V (on CRT panel) Ic7015-6D

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Repair facilities

1. Functional blocks

On both the service printing on the copper and the component side, functional blocks are indicated by lines and text.

2. Test points

The AA5H chassis is equipped with test points in the service printing on both sides of mono-board. These test points are referring to the functional blocks as mentioned above:

- P1-P2-P3, etc: Test points for the power supply
- L1-L2-L3, etc: Test points for the line drive and line output circuitry
- F1-F2-F3, etc: Test points for the frame drive and frame output circuitry
- S1-S2-S3, etc: Test points for the synchronisation circuitry
- V1-V2-V3, etc: Test points for the video processing circuitry
- A1-A2-A3, etc: Test points for the audio processing circuitry
- C1-C2-C3, etc: Test points for the control circuitry
- T1-T2-T3, etc: Test points for the teletext processing circuitry

The numbering is done in a for diagnostics logical sequence; always start diagnosing within a functional block, in the sequence of the relevant test points, for that functional block.

3. Service default-alignment mode (SDAM)

The service default-alignment mode is a pre-defined mode which can be used for faultfinding (especially when the TV gives no picture at all). All oscillograms and DC voltages in this service manual are measured in the service default-alignment mode. Alignment (if present) are also done in this mode.

Activate the service default-alignment mode can be done in 2 ways:

1. By short-circuiting the service pins PT1 and PT2 of the microcomputer (pin 14 of IC7600) while pressing the mains-switch.
2. From normal operation mode by pressing the button "DEFAULT" or "ALIGN" on the DST (Dealer Service Tool) RC7150.

Leaving the service default-alignment mode to normal operation can only be done by the stand-by on the remote control or by pressing diagnose 99 followed by the OK-button on the DST (so not via mains switch "off"; after mains switch "off" and then "on" again the set will start up in the service default-alignment mode again to enable easy faultfinding).

Functions of the service default-alignment mode:

1. All analogue settings (volume, contrast, brightness and saturation) are in the mid position.
2. Set is tuned to 475.25 Mhz.
3. Delta volume settings are not used (delta volume setting = a delta on the volume setting).
4. OSD error message (present available error code) is displayed continuously.
5. The +key and the -key of TV will act as search and auto store on the maximum program number.
6. Automatic switch off function (set switches "off" after 15 minutes no IDENT) will be switched off.
7. Hotel mode will be disabled.
8. All other functions remain normal controllable.
9. Software version of the microprocessor used in that typical set is displayed in the right top corner.
10. A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by 1 hour, so +1 at the counter).
11. The "S" in the middle of the screen above the counter indicate that the set is in the service default-alignment mode.
12. Option code
    This code indicates the Options setting of the set.
13. Error code history:
    The 5 last different error codes occurred are stored in the EEPROM memory; last error code detected will be displayed on the left side (see for an overview of all possible error codes Fig. 6.3), so e.g.:

0 0 0 0 0	means no error codes present in the buffer.
3 0 0 0 0	means one error code present in the buffer; error code 3.
2 3 0 0 0	means two error codes present in the buffer; last detected error code is error code 2, previous detected error code is error code 3.

The error code history buffer is cleared when the Service Menu is left by the stand-by command or by diagnose 99 command. In case the Service Menu is left by the mains switch "off" the error code history buffer will not be cleared. With commands diagnose 1..5 on the DST it is possible to read out the error-buffer. This can be done on the following manner:

- press the diagnose button on the DST.
- press the number of the error position you want to read.
- press the OK-button on the DST.

Diagnose 1 is the most actual error. So the left position of the error-buffer. Diagnose 5 displays the most right position of the error-buffer. If there is an error on the selected position the led will blink twice the error code. The error code on the DST has to be ignored. Diagnose 1..5 is an powerfull tool to read out the error-buffer when there is no picture.

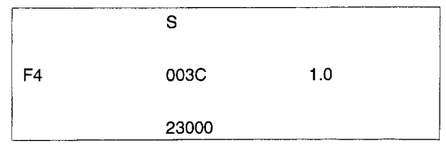


Fig. 6.1

Repair facilities

4. Option setting

All option setting are done in the normal menus. These menus can be selected by selecting the maximum TV-channel followed by pushing the volume/program selection button and at the same time pressing the volume-minus button for more then four seconds. With cursor up/down one of the items can be selected. With cursor right/left the items can be changed. New option settings are activated immediately.
The following options can be choosen:

System	SINGLE	For a BG,DK or BG/DK set.
	MULTI F	For a BG+L+I set.
	UHF	For a I, UHF only set.
Teletext	YES/NO	Teletext can be selected yes or no.
Clock	YES/NO	Clock can be selected yes or no.
Radio	INT	To select internal radio tuner.
	EXT	This means that the radio is external. In this way TV-presets could be used as radio. The installation of these kind of programs is the same as for TV programmes. Radio channels can be modulated by the system installer on TV frequencies.
	NO	No radio available.

5. Option code

The option code is built up with 8 bits. The following table explains wich option influences which bit.

BIT	Description	
0 (LSB)	Not used	
1	Interface system	0=non system 1=system
2	Radio internal	1=radio present
3	Not used	
4	Clock	1=clock present
5	Teletext	1=txt present
6	Tv-system	
7 (MSB)	Tv-system	

Fig. 6.2

Tv-system (bit 7 and bit 6)
00 = single PAL
01 = PAL I
10 = not used
11 = MULTI-F

Example: option code F4 (hexadecimal presented) means a full multi set non system with teletext, clock and internal radio. F4 is in binair 1111 0100.

6. Error messages

The microcomputer also detects errors in circuits connected to the I²C (Inter IC) bus. These error messages are communicated via OSD (On Screen Display) and a flashing LED in the service default-alignment mode. (error code history buffer):

1. In normal operation:
   In normal operation no errors are indicated.
2. In the service default-alignment mode:
   In the service default-alignment mode both the "OSD error code" and the "LED error" indication will display the present detected error twice.

7. Hotel mode

7.1 Hotel-mode "on"

To enter to hotel mode a setting must be changed in the installation menu.

7.2 Fuction of the hotel mode

- Volume cannot be increased above the maximum level installed.
- Store open/close is ignored, message "LOCKED" is shown.
- Local keys are blocked. If the blocking option is set, a message "LOCKED" is shown when a local key is pressed.
- All protected programs cannot be selected. To free protected programmes the remote control key "PIP on/off" must be pressed or the relevant menu item must be changed. This key works as a toggle function.

7.3 Hotel-mode "off"

To leave to hotel mode a setting must be changed in the installation menu. Same setting as in the Hotel-mode "on".

"OSD error number" (Service Menu)	"LED behaviour"	Error description	Possible defective component
0	No led blinking	No error	
1	LED blinks once	General I²C bus	
2	LED blinks twice times	Eeprom error	IC7685
3	LED blinks three times	TXT-error	IC7700 / 7990 / wrong option
4	LED blinks four times	PLL-tuner error	Item 1001 / wrong option
5	LED blinks five times	Radio-module error	IC7904 / item 1910 / wrong option
6	LED blinks six times	Display error	IC7951

Fig. 6.3

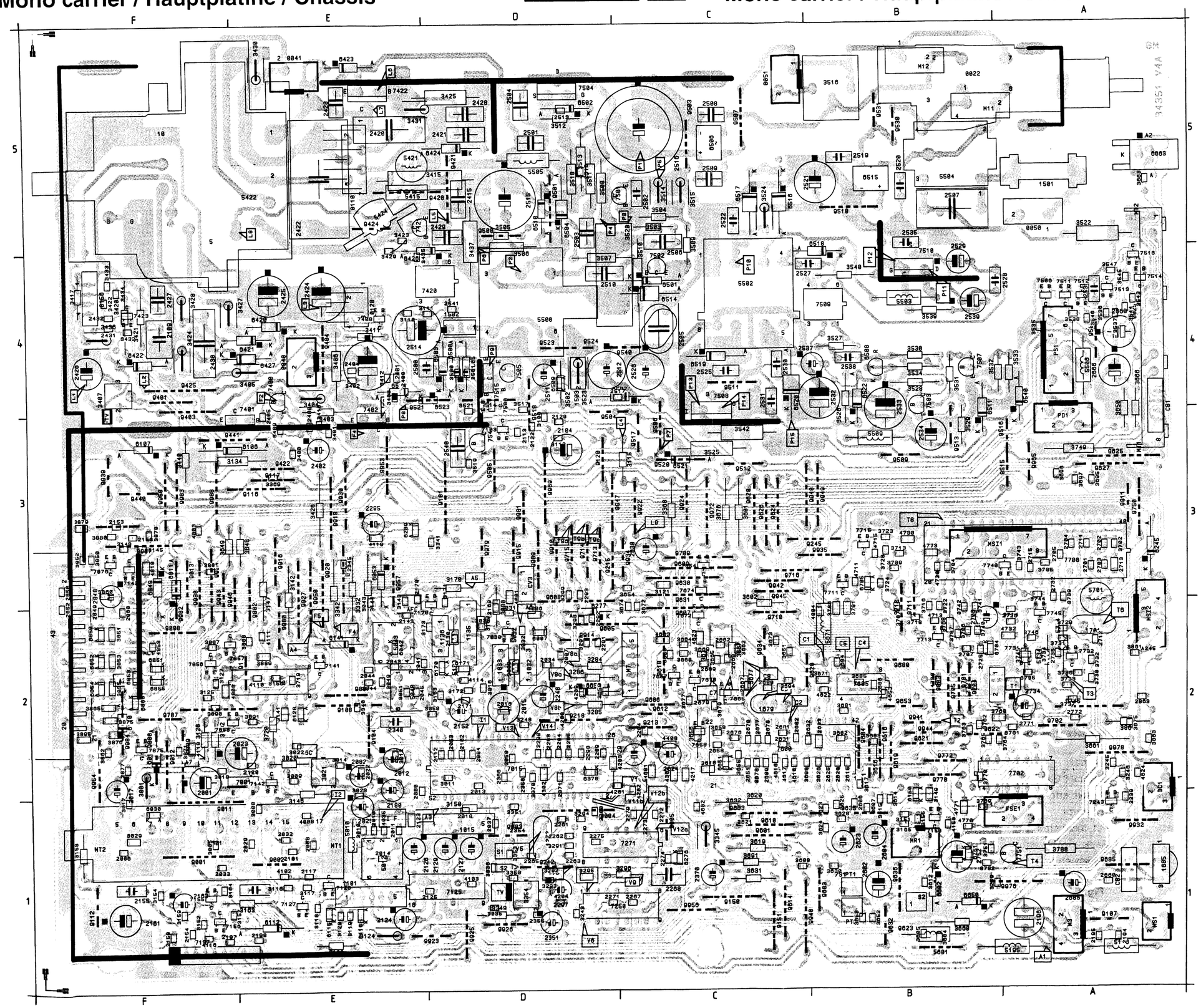
Mapping main chassis

0022	B	2263	D1 *	2615	B2 *	3121	C3 *	3436	F4	3672	C2 *	4003	F3 *	6420	E4	7665	C2 *	9616	B2	CB2	A1
0025	A4	2265	D1 *	2620	B2 *	3124	E1	3437	D4	3673	C2 *	4006	D2 *	6421	E4	7670	C2 *	9618	C2	CV1	A2
0040	E4	2267	C1 *	2623	B1	3125	F2 *	3440	F3	3674	C2 *	4008	E1 *	6422	F4	7672	C2 *	9619	B2	CV3	D3
0041	E5	2268	C1	2624	C2	3126	F2	3500	D4 *	3675	A2 *	4035	E1 *	6423	E5	7674	C3 *	9620	B2	DC1	A1
0043	F2	2271	C1 *	2625	B2 *	3127	E2 *	3501	D4 *	3676	C3	4102	E1 *	6424	D5	7685	B2	9621	B2	FSE1	A1
0050	A5	2272	C1 *	2626	B2 *	3134	E3	3502	D4	3677	C2 *	4103	D1 *	6426	D4	7700	A3	9622	A2	M11	A5
0051	B5	2273	C1 *	2629	C2	3141	E2 *	3503	C4	3678	C2 *	4110	E2 *	6427	E4	7702	A2	9623	B1	M12	B5
0110	E5	2274	C1 *	2630	C3	3142	E3	3504	C5	3679	C2 *	4111	E2 *	6500	D4	7711	B3 *	9624	C3	M3	A1
0120	E4	2275	D1 *	2631	C2 *	3143	E3 *	3505	D4	3680	C2 *	4114	D2 *	6501	C4	7713	B2 *	9625	A3	M7	C2
0156	F4	2279	C1 *	2632	B2 *	3144	E3	3506	D4	3681	B2 *	4116	F1 *	6502	D5	7715	B3 *	9626	C3	ML1	F3
1001	F1	2280	D1 *	2633	B2 *	3145	F3 *	3507	C4	3682	B2 *	4118	F2 *	6503	D4	7731	A2 *	9627	A3	ML2	F3
1015	D1	2283	D2 *	2651	C2 *	3146	E2	3508	C5	3683	B2 *	4119	E3 *	6504	D5	7732	A2 *	9628	C3	ML3	F3
1032	D2	2284	D2 *	2658	C2 *	3147	E3	3509	C4	3684	B2 *	4150	B1 *	6505	D4	7740	A3 *	9630	C3	ML4	F2
1033	D2	2285	D2 *	2660	A1 *	3148	F3 *	3510	C4	3685	B2 *	4201	C2 *	6506	C5	7745	A2 *	9631	C3	ML5	F2
1101	E1	2289	C2 *	2662	C2 *	3149	B1 *	3511	D5	3691	C1	4202	C2 *	6507	C4	7751	A1	9632	B1	MR1	B1
1135	D2	2290	D2 *	2663	C2 *	3150	D1	3512	D5	3694	C2 *	4203	C2 *	6508	B4	7856	F2 *	9633	C1	MS1	A1
1136	D2	2291	C2 *	2666	A4	3151	B1 *	3513	D5	3695	A3 *	4204	D1 *	6509	D4 *	7857	E2 *	9634	C2	MSI1	A3
1272	D1	2292	D2 *	2667	C2 *	3152	F1 *	3514	C5	3696	A3 *	4208	D2 *	6510	D5	7858	E2 *	9635	B1	MSI2	A2
1501	A5	2293	D3 *	2668	A4	3153	D2 *	3515	C5	3697	A3 *	4209	D2 *	6511	A3	7875	F2 *	9636	B1	PD1	A3
1502	D4	2294	C2 *	2669	C2 *	3154	F1 *	3516	B5	3698	B2 *	4217	C2 *	6514	C4	7876	F3 *	9653	B2	PS1	A4
1503	D4	2295	E3	2670	C2 *	3155	B1 *	3517	D4 *	3702	A3 *	4302	D2 *	6515	B5	9000	F2	9680	B2	PT1	B1
1679	C2	2297	D1	2676	C2 *	3156	E2 *	3518	D5	3704	B3 *	4303	C2 *	6516	C5	9001	F1	9685	A1	PT2	B1
1685	A1	2298	D2 *	2677	C2 *	3157	E1 *	3519	D3 *	3705	A3 *	4408	C2 *	6517	C5	9002	E1	9701	B2	S2	B1
1701	A2	2340	E2	2678	C2 *	3158	F1	3520	C4	3706	B2 *	4601	C2 *	6518	B4	9003	D1	9702	A2	*= Chip component	
2001	F2	2345	E3 *	2679	C2 *	3159	F1 *	3521	D4 *	3707	B2 *	4602	C1 *	6519	C4	9004	D1	9704	B2		
2006	F1 *	2350	D2 *	2680	C2 *	3163	E1	3522	A4	3709	B3 *	4603	C2 *	6520	B4	9005	C1	9705	B2		
2007	D2 *	2351	D1	2681	C2 *	3164	E1 *	3523	D4	3713	B3 *	4616	B2 *	6521	C3	9007	E2	9707	F2		
2008	E1 *	2354	D1 *	2682	B2 *	3165	B1 *	3524	C4	3714	A2 *	4617	C2 *	6522	B4	9008	F2	9708	E2		
2010	E1 *	2355	D1 *	2685	A1	3169	D2	3525	C3	3716	B2 *	4618	C2 *	6523	D4	9009	F2	9709	C3		
2011	E1 *	2366	D2 *	2686	B2 *	3170	D3	3526	B4	3718	B2 *	4622	B2 *	6524	E4	9011	F1	9710	C2		
2012	E2	2370	C1	2689	C2 *	3171	D3 *	3527	B4	3719	E2 *	4623	C2 *	6540	A4	9012	F2	9711	B2		
2013	D2 *	2371	D2 *	2701	A3 *	3172	D2 *	3528	B4	3720	E2	4624	A2 *	6602	B1	9013	F3	9712	B2		
2014	E1 *	2400	E3 *	2702	A3 *	3173	D2 *	3529	B3	3722	B2 *	4653	B2 *	6650	B1	9101	D3	9713	C3		
2015	D2	2401	E4	2703	A3 *	3198	E1	3530	B4	3723	B3 *	4711	B3 *	6651	C2 *	9104	E2	9714	D3		
2016	D2 *	2402	E3	2704	A3 *	3243	D1 *	3531	B4	3724	B3 *	4713	B2 *	6658	D2	9107	A1	9715	D3		
2017	F2	2404	E4 *	2705	A3 *	3245	A2 *	3532	A4	3728	B3 *	4715	B3 *	6704	A2 *	9108	E2	9716	B3		
2018	D1 *	2405	E3 *	2706	A2	3246	A2 *	3533	A4	3729	A2 *	4720	B3 *	6705	B3 *	9111	E2	9745	A2		
2022	E2 *	2408	E4 *	2707	B2 *	3248	D2 *	3534	B4	3731	A2 *	4730	B3 *	6751	B1 *	9112	F1	9750	A3		
2023	E2	2415	D5	2711	A3 *	3259	A1 *	3535	A4 *	3732	A2 *	4732	A2 *	6849	F3	9116	E3	9770	B2		
2025	E1	2420	E5	2712	A2 *	3284	D2	3536	A4 *	3733	A2 *	4738	B2 *	6850	F2 *	9117	E3	9772	B2		
2029	E1 *	2421	D5	2713	A3 *	3285	D2	3537	A4 *	3734	A2 *	4770	B1 *	6851	F2 *	9120	C3	9802	E3		
2030	D2 *	2422	E5	2715	A3 *	3286	D2	3538	A4 *	3735	A2 *	4771	B1 *	6852	F2 *	9150	C1	9803	B2		
2031	E1	2423	E5	2725	A2 *	3291	D1 *	3539	B4	3736	A2 *	4773	B3 *	6853	F2 *	9151	C1	9909	D3		
2032	E1 *	2424	E4	2726	A2 *	3292	D1 *	3540	B4	3737	A2 *	4804	B2 *	6854	F2 *	9212	D1	9910	D3		
2033	E1 *	2425	E4	2727	B2 *	3293	D1 *	3542	C3	3738	A2 *	4808	E2 *	6855	F2 *	9213	C2	9911	A3		
2034	D2 *	2426	F4	2732	A3 *	3294	D1 *	3543	A4 *	3739	A3 *	4810	F3 *	6865	F2 *	9215	C3	9914	D2		
2037	D1 *	2427	F4	2734	A2	3295	D1 *	3544	A4 *	3740	B2 *	4853	F2 *	7001	E2	9218	D2	9915	D3		
2041	D2 *	2428	D5	2736	A2 *	3296	C1	3545	A4 *	3741	B2 *	5010	E1	7015	D2	9245	B3	9916	E3		
2043	E2 *	2429	D4	2752	B1	3297	D2 *	3546	A4 *	3742	B2 *	5012	E1	7030	D2 *	9401	F4	9918	E3		
2044	E2 *	2430	F4	2771	A2 *	3298	D2 *	3547	A4 *	3743	A3 *	5032	D2	7103	D3 *	9403	F4	9920	E3		
2045	D2 *	2431	F4 *	2772	A2 *	3299	D3 *	3601	C3	3744	A3 *	5040	D2	7125	D1	9404	E4	9922	C3		
2050	D2 *	2432	F4 *	2848	F3	3332	E3	3602	C2	3745	A2	5043	E2	7126	E1 *	9420	D5	9923	D1		
2053	D2 *	2500	D4	2849	F2 *	3340	E2 *	3604	B1 *	3746	A2 *	5130	D2	7127	E1 *	9421	D5	9924	C3		
2080	D2 *	2501	D5	2850	F3 *	3341	D3 *	3605	B1 *	3749	A3	5195	A1	7140	E2	9422	E3	9925	D1		
2082	E2	2502	C5	2852	F2 *	3342	E3	3607	B1 *	3751	A1 *	5196	A1	7141	E2 *	9424	E4	9926	D1		
2084	D2 *	2503	D4	2860	F2 *	3345	C1	3608	B1 *	3752	A1 *	5415	D5	7142	E2 *	9425	F4	9927	E3		
2101	E1 *	2504	D5	2863	A2 *	3349	D1	3612	B1 *	3760	A2 *	5421	D5	7143	F3 *	9440	F3	9928	F3		
2104	D3	2505	C4	2877	F2 *	3350	D1 *	3614	B1 *	3761	A2 *	5422	E5	7150	B1 *	9441	E3	9930	E3		
2109	F4	2506	C4	3001	F2	3351	D1 *	3615	B1 *	3762	B2 *	5424	E4	7155	F1 *	9500	D4	9932	A1		
2112	D2 *	2507	B5	3005	F1 *	3353	D1 *	3616	B2	3763	B2 *	5500	D4	7156	E1 *	9501	D5	9934	C3		
2113	D3 *	2508	C5	3008	E1 *	3354	D1	3617	B2 *	3764	A2 *	5502	C4	7157	F1	9502	A4	9935	B3		
2117	E1 *	2509	C5	3009	E2 *	3368	C3	3618	C2 *	3765	A2 *	5503	B4	7170	D2 *	9503	C5	9937	F3		
2120	D3 *	2510	C4	3010	E1 *	3369	E3 *	3619	C1	3768	B2	5504	B5	7243	A1 *	9504	C3	9938	F3		
2122	D3 *	2511	D4	3011	D2 *	3370	D2 *	3620	C1	3769	A1 *	5505	D5	7250	C1	9505	D3	9939	F3		
2123	D1 *	2512	C4	3012	E2 *	3400	E3 *	3621	C1 *	3770	B2 *	5506	A4	7271	C1	9506	C3	9940	B1		
2124	E1	2513	D5 *	3014	E2 *	3401	E3 *	3623	B1 *	3781	B2 *	5509	B3	7400	E4	9507	C5	9941	B2		
2125	D1 *	2514	D4	3016	D2 *	3402	E4 *	3624	B1 *	3786	B2 *	5601	B1	7401	E3	9509	B3	9942	C3		
2126	D1	2515	D5	3017	F1 *	3403	E4	3625	B1 *	3787	B2 *	5671	B2	7402	E3	9510	B5	9943	E3		
2127	D1	2516	C5	3018	E2 *	3404	E4	3628	B1 *	3788	A1	5677	C2	7408	E4 *	9511	C4	9944	B2		
2128	E2 *	2517	C4 *	3020	E2	3405	E4	3630	B1 *	3850	F3 *	5701	A2	7420	D4	9512	C3	9945	C3		
2129	D1	2518	D5 *	3021	E2	3406	E4	3631	C1	3851	F2 *	5704	A2	7421	D4	9513	B3	9946	E3		
2130	D2 *	2519	B5	3022	E2 *	3407	F4	3632	C1 *	3852	F3 *	5734	A2	7422	E5	9514	D4	9947	C3		
2143	D2 *	2520	B5	3023	E1 *	3408	E4 *	3648	E3	3853	F2 *	5999	E5	7423	F4 *	9515	A3	9948	B3		
2152	D2	2521	B5	3029	F1 *	3409	E3 *	3649	E3	3855	F2 *	6007	D2 *	7500	D4 *	9516	A3	9949	B3		
2153	F3 *	2522	C4	3030	D2	3410	E3 *	3650	A3	3860	F3 *	6010	F2	7501	C5	9517	C3	9950	E3		
2154	F1 *	2525	C4	3031	D2 *	3411	E4	3651	B2 *	3861	A2 *	6011	F3	7502	C4	9518	D3	9953	E3		
2155	F1	2526	C4	3032	D2 *	3412	E4 *	3652	B1 *	3862	F2 *	6030	F1 *	7503	B4	9520	C3	9954	F2		
2156	F3 *	2527	B4	3033	D2 *	3415	D5	3653	B1 *	3863	A2 *	6042	E2 *	7504	D5	9521	D4	9956	C1		
2158	F1 *	2528	A4	3035	D1 *	3417	F4	3654	C3 *	3864	A2	6053	E3	7505	D4	9523	D4	9957	E3		
2161	F1	2529	B4	3036	D1 *	3420	F4	3655	C2 *	3865	F2 *	6106	E3	7506	A4 *	9524	D4	9959	F3		
2162	D2 *	2530	C4	3043	E3 *	3421	F4	3656	C2	3871	F2 *	6107	F3	7507	B4	9530	B5	9965	A3		
2163	F1	2531	C4	3044	E2 *	3422	F4 *	3658	C2 *	3875	F2 *	6110	F2	7508	C4	9531	B5	9967	F3		
2169	D2 *	2532	B4	3049	E2 *	3423	E4 *	3659	C2 *	3876	F2 *	6112	E1	7509	B4	9540	C4	9969	D3		
2170	D3 *	2533	B3	3050	D2 *	3424	F4	3660	B1	3878	F3 *	6115	E1 *	7510	B4	9601	C1	9972	C3		
2171	D2 *	2534	B3	3051	D2 *	3425	D5	3661	A2	3879	F3 *	6116	E1 *	7511	A4 *	9603	B1	9976	A1		
2180	E2	2535	B4	3100	D3 *	3426	E3	3662	C2 *	3880	F3 *	6128	E2 *	7512	A4 *	9604	B2	9978	A2		
2194	A1 *	2536	A4	3110	D4 *	3427	E4	3663	A5 *	3881	F3 *	6141	E2	7513	A4 *	9605	C2	9979	D3		
2195	A1 *	2537	B4	3111	D4 *	3428	F4	3664	C2 *	3887	F2 *	6150	B1 *	7514	A4 *	9606	C2	9980	E2		
2196	A1	2538	B4	3112	D3 *	3429	E4 *	3665	C2 *	3888	E2 *	6170	D2 *	7515	D4	9607	C2	9981	D3		
2197	E1 *	2539	B4	3115	C3	3430	E5	3666	A3	3889	E2 *	6171	D2 *	7516	A4 *	9608	D3	9982	F3		
2198	E1 *	2540	D3	3116	E1 *	3431	D5	3667	C2	3890	F2 *	6245	A3	7540	D3	9609	C3	9983	F3		
2239	A1 *	2541	D4 *	3117	E1 *	3432	F4 *	3668	C2 *	3891	E2 *	6276	C1 *	7600	C2	9610	C1	9984	F2		
2248	D2	2602	B1	3118	E1 *	3433	F4 *	3669	C2 *	3892	F2	6277	D2	7654	C3 *	9611	B2	9987	E3		
2261	D1 *	2604	B1	3119	E1 *	3434	F4 *	3670	C2	3895	F2 *	6289	D3 *	7657	C2 *	9612	C2	9988	E3		
2262	D1 *	2606	B1 *	3120	E1 *	3435	D4 *	3671	B2 *	4001	D3 *	6370	D2 *	7658	C2 *	9614	C1	CB1	A3		

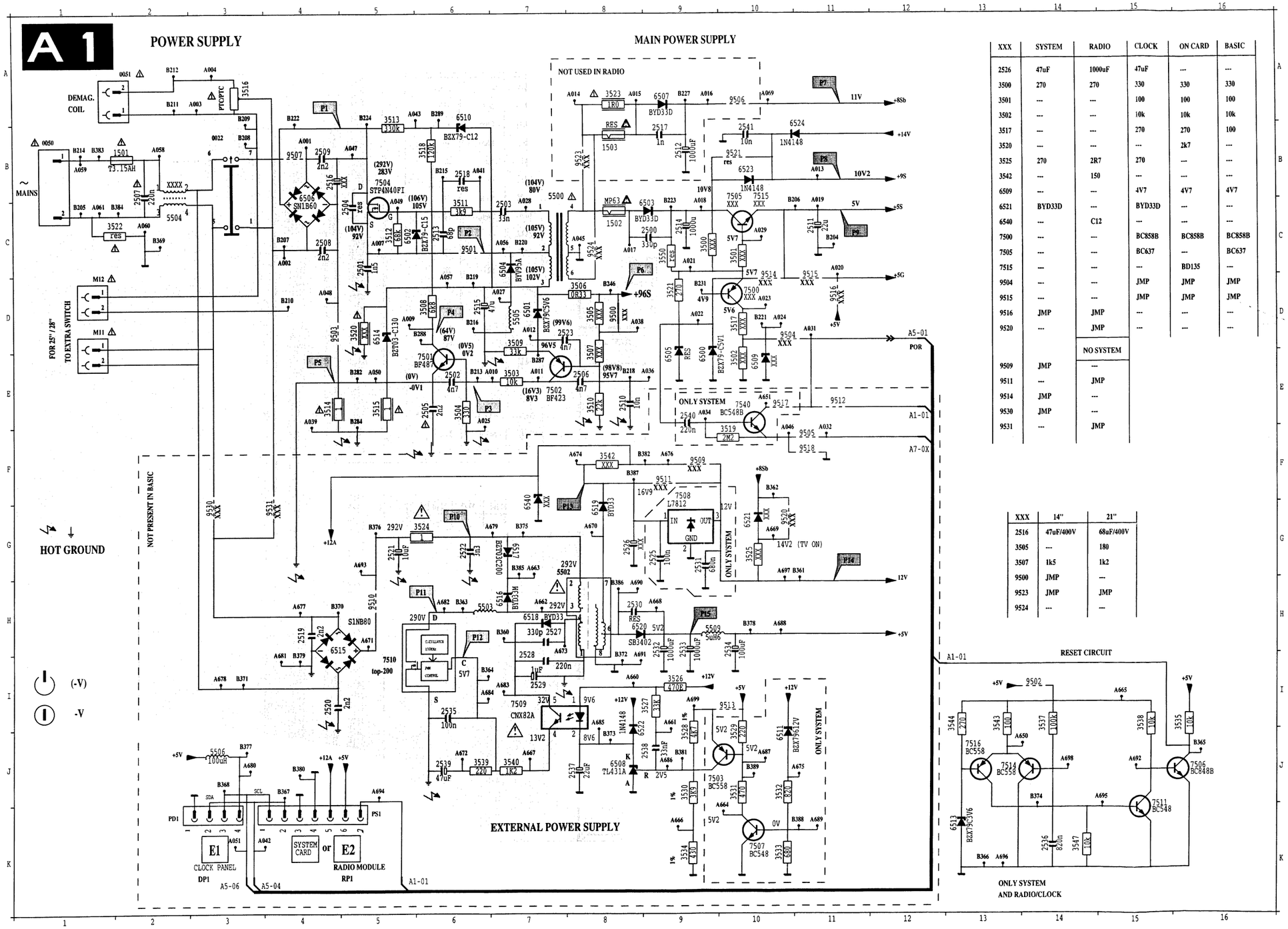
Mono carrier / Hauptplatine / Châssis

Chassis A7H.1 | 8

Mono carrier / Hauptplatine / Châssis



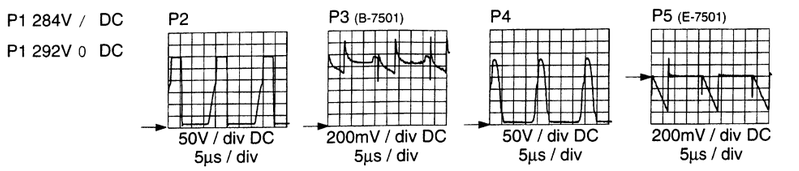
Power supply / Speisung / Alimentation



XXX	SYSTEM	RADIO	CLOCK	ON CARD	BASIC
2526	47uF	1000uF	47uF	---	---
3500	270	270	330	330	330
3501	---	---	100	100	100
3502	---	---	10k	10k	10k
3517	---	---	270	270	100
3520	---	---	---	2k7	---
3525	270	2R7	270	---	---
3542	---	150	---	---	---
6509	---	---	4V7	4V7	4V7
6521	BYD33D	---	BYD33D	---	---
6540	---	C12	---	---	---
7500	---	---	BC858B	BC858B	BC858B
7505	---	---	BC637	---	BC637
7515	---	---	---	BD135	---
9504	---	---	JMP	JMP	JMP
9515	---	---	JMP	JMP	JMP
9516	JMP	JMP	---	---	---
9520	---	JMP	---	---	---
		NO SYSTEM			
9509	JMP	---			
9511	---	JMP			
9514	JMP	---			
9530	JMP	---			
9531	---	JMP			

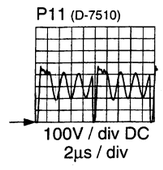
XXX	14"	21"
2516	47uF/400V	68uF/400V
3505	---	180
3507	1k5	1k2
9500	JMP	---
9523	JMP	JMP
9524	---	---

0022 B 3 | 7500 D10 | A693 G 5
0050 C 1 | 7501 E 6 | A694 J 5
0050 B11 | 7502 E 7 | A695 J15
0051 A 2 | 7503 J 9 | A696 K13
0051 A 2 | 7504 B 5 | A697 G10
1501 B 1 | 7505 B10 | A699 I 9
1502 C 8 | 7506 J16 | B204 C11
1503 B 8 | 7507 K10 | B205 C 1
2500 C 9 | 7508 F 9 | B206 C10
2501 C 5 | 7509 I 7 | B207 C 4
2502 E 6 | 7510 I 5 | B208 B 3
2503 C 7 | 7511 K15 | B209 A 3
2504 C 5 | 7514 J13 | B210 D 4
2505 B 6 | 7515 B10 | B211 A 2
2506 B 8 | 7516 J13 | B212 A 2
2507 B 2 | 7540 B10 | B213 D 6
2508 C 4 | 9500 D 8 | B214 B 1
2509 B 4 | 9501 C 6 | B215 C 5
2510 E 8 | 9502 I14 | B216 D 6
2511 C11 | 9503 D 4 | B218 E 8
2512 B 9 | 9504 D10 | B219 D 6
2513 C 6 | 9505 F11 | B220 C 7
2514 C 6 | 9506 A10 | B221 D10
2515 D 6 | 9507 B 4 | B222 A 4
2516 B 4 | 9509 F 9 | B223 C 9
2517 B 9 | 9510 H 5 | B224 A 5
2518 B 4 | 9511 I 9 | B227 A 9
2519 H 4 | 9512 B11 | B231 D 9
2520 I 4 | 9513 I10 | B246 D 8
2521 G 5 | 9514 D10 | B282 E 5
2522 G 6 | 9515 D11 | B284 E 5
2523 G 9 | 9516 D11 | B287 E 7
2525 G 9 | 9517 E10 | B288 D 6
2526 G 8 | 9518 F11 | B289 A 6
2527 H 7 | 9520 G10 | B360 H 7
2528 I 7 | 9521 B10 | B361 G11
2529 I 7 | 9523 B 8 | B362 F10
2530 H 8 | 9524 C 8 | B363 H 6
2531 G 9 | 9530 G 3 | B364 I 6
2532 H 9 | 9531 G 4 | B365 J16
2533 H 9 | A001 B 4 | B366 K13
2534 H10 | A1-01 K 6 | B367 J 4
2535 I 6 | A1-01 E12 | B368 C 2
2536 K14 | A1-01 I13 | B369 C 2
2537 J 8 | A002 C 4 | B370 H 4
2538 J 8 | A003 A 3 | B371 I 3
2539 J 6 | A004 A 3 | B372 I 8
2540 B10 | A5-01 D12 | B373 I 8
2541 B10 | A5-04 K 4 | B374 J14
3500 C 9 | A5-06 K 3 | B375 G 7
3501 C10 | A007 C 5 | B376 G 5
3502 B10 | A7-0X B11 | B377 I 3
3503 E 7 | A009 D 6 | B378 H10
3504 E 6 | A010 E 6 | B379 I 4
3505 D 8 | A011 E 7 | B380 J 4
3506 D 8 | A012 E 7 | B381 I 8
3507 D 8 | A014 A 8 | B382 F 8
3508 D 6 | A015 A 8 | B383 B 1
3509 D 7 | A016 A 9 | B384 C 2
3510 E 8 | A017 C 9 | B385 G 7
3511 C 5 | A018 C 9 | B386 F 8
3512 C 5 | A019 C11 | B387 F 8
3513 A 5 | A020 C11 | B388 K11
3514 E 4 | A021 C 9 | B389 G10
3515 E 5 | A022 D 9 | M11 D 1
3516 A 3 | A024 D10 | M11 D 1
3517 D10 | A025 B 6 | M12 D 1
3518 B 6 | A027 D 7 | M12 D 1
3519 F10 | A028 C 7 | PD1 K 2
3520 D 5 | A029 C10 | PD1 K 3
3521 D 9 | A031 F11 | PD1 K 3
3522 C 7 | A032 F10 | PS1 K 4
3523 A 8 | A034 E 9 | PS1 K 4
3524 G 6 | A036 E 8 | PS1 K 4
3525 G10 | A038 D 8 | PS1 K 5
3526 I 9 | A039 B 6 | PS1 K 4
3527 I 8 | A041 B 6 | PS1 K 4
3528 J 9 | A042 K 3 | PS1 K 4
3529 J10 | A043 A 5 | PS1 K 4
3530 J 9 | A045 C 8 |
3531 J10 | A046 F10 |
3532 J10 | A047 B 5 |
3533 K10 | A048 D 4 |
3534 K 9 | A049 B 5 |
3535 I15 | A050 B 5 |
3537 I14 | A051 K 3 |
3538 I15 | A056 C 7 |
3539 J 6 | A057 C 6 |
3540 J 7 | A058 B 2 |
3542 F 8 | A059 B 1 |
3543 I13 | A060 C 2 |
3544 I12 | A061 C 1 |
3547 K14 | A069 A10 |
3550 C 9 | A651 E10 |
5500 B 7 | A660 I 8 |
5502 G 7 | A661 I 9 |
5503 G 6 | A662 H 7 |
5504 C 2 | A663 G 7 |
5505 D 7 | A664 K10 |
5506 J 3 | A665 I15 |
5509 H 9 | A666 K 9 |
6500 E 9 | A667 J 7 |
6501 D 7 | A668 H 9 |
6502 C 5 | A669 G10 |
6503 C 9 | A670 G 8 |
6504 C 7 | A671 H 5 |
6505 B 9 | A672 J 6 |
6506 B 4 | A673 H 7 |
6507 A 9 | A674 F 8 |
6508 J 8 | A675 J11 |
6509 E10 | A676 F 9 |
6510 A 6 | A677 H 4 |
6511 J10 | A678 I 3 |
6513 K13 | A679 G 6 |
6514 D 5 | A680 J 3 |
6515 H 4 | A681 I 4 |
6516 H 7 | A682 H 6 |
6517 G 7 | A683 I 7 |
6518 H 7 | A684 I 6 |
6519 G 8 | A685 I 8 |
6520 H 8 | A686 J 9 |
6521 G10 | A687 J10 |
6522 I 8 | A688 H10 |
6523 B10 | A689 K11 |
6524 B11 | A690 H 8 |
6540 F 7 | A691 I 8 |



P6 95V7 / DC
P6 98V8 0 DC
P7 11V DC

P8 10V2 DC
P9 5V DC
P10 292V DC

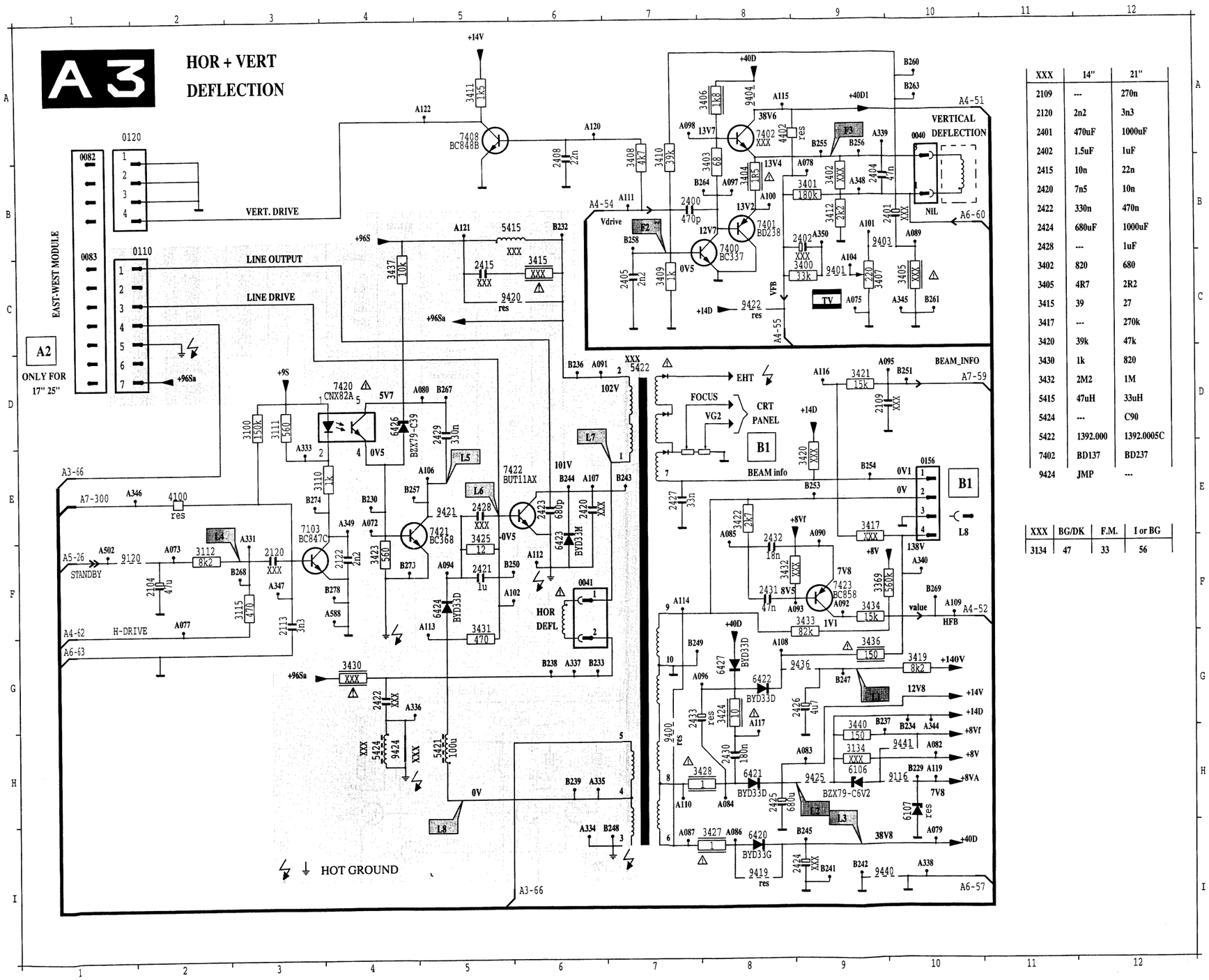


P12 5V7 DC
P13 16V9 DC
P14 12V DC
P15 5V DC

→ = 0V

A7H.1_A1.cdr
181197

Deflection / Ablenkung / Balayage

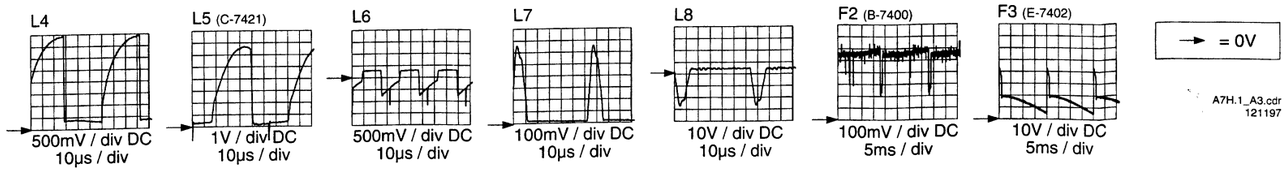


XXX	14"	21"
2109	---	270n
2120	2n2	3n3
2401	470uF	1000uF
2402	1.5uF	1uF
2415	10n	22n
2420	7n5	10n
2422	330n	470n
2424	680uF	1000uF
2428	---	1uF
3402	820	680
3405	4R7	2R2
3415	39	27
3417	---	270k
3420	39k	47k
3430	1k	820
3432	2M2	1M
5415	47uH	33uH
5424	---	C90
5422	1392.000	1392.0005C
7402	BD137	BD237
9424	JMP	---

XXX	BG/DK	F.M.	I or BG
3134	47	33	56

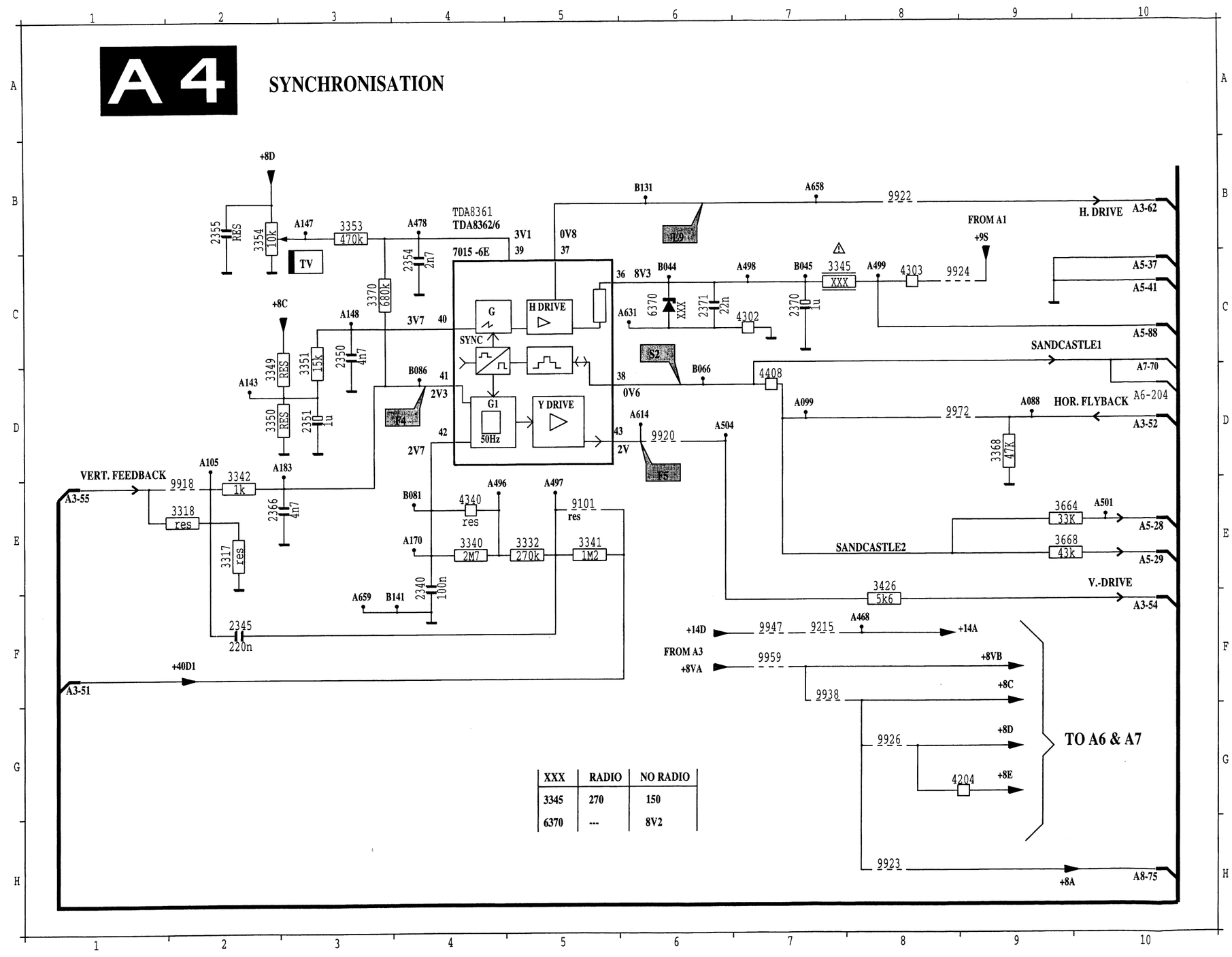
0040	A10	7420	D 4	B248	I 7
0040	A10	7421	E 5	B249	G 7
0041	F 6	7422	F 5	B250	F 5
0041	F 6	7423	F 9	B251	D10
0110	B 1	9116	H10	B253	E 9
0110	D 2	9120	F 1	B254	E 9
0110	C 2	9400	H 7	B255	A 9
0110	C 2	9401	C 9	B256	A 9
0110	C 2	9403	B 9	B257	E 4
0110	C 2	9404	A 8	B258	B 7
0110	C 2	9419	I 8	B260	A10
0120	A 1	9420	C 5	B261	C10
0120	B 2	9421	E 5	B263	A10
0120	B 2	9422	G 8	B264	B 8
0120	B 2	9424	H 4	B267	D 5
0156	E10	9425	H 9	B268	F 3
0156	E10	9436	G 9	B269	F10
0156	E10	9440	I 9	B273	F 4
0156	E10	9441	H10	B274	E 3
2104	F 2	A3-66	E 1	B278	F 4
2109	D 9	A3-66	I 6		
2113	F 3	A4-51	A10		
2120	F 3	A4-52	F10		
2122	F 4	A4-54	B 6		
2400	B 7	A4-55	C 8		
2401	B10	A4-62	F 1		
2402	B 9	A5-26	F 1		
2404	B 9	A6-57	I10		
2405	C 7	A6-60	B10		
2408	A 6	A6-63	G 1		
2415	C 5	A7-300	E 1		
2420	E 6	A7-59	D10		
2421	F 5	A072	E 4		
2422	G 4	A073	F 2		
2423	E 6	A075	C 9		
2424	I 9	A077	F 2		
2425	H 8	A078	B 9		
2426	G 9	A079	I10		
2427	G 7	A080	D 5		
2428	E 5	A082	H10		
2429	D 5	A083	H 9		
2430	H 8	A084	H 8		
2431	F 8	A085	F 8		
2432	F 8	A086	I 8		
2433	G 7	A087	I 7		
3100	D 3	A089	B10		
3110	E 3	A090	F 9		
3111	D 3	A091	D 6		
3112	F 2	A092	F 9		
3115	F 3	A093	F 9		
3134	H 9	A094	F 5		
3369	F 9	A095	D 9		
3400	C 9	A096	G 7		
3401	B 9	A097	B 8		
3402	B 9	A098	A 8		
3403	B 8	A100	B 8		
3404	B 8	A101	B 9		
3405	C10	A102	F 5		
3406	A 8	A104	C 9		
3407	C 9	A106	E 5		
3408	A 7	A107	G 6		
3409	C 7	A108	G 8		
3410	A 7	A109	F10		
3411	A 5	A110	H 7		
3412	B 9	A111	B 7		
3415	C 6	A112	F 6		
3417	E 9	A113	F 5		
3419	G10	A114	F 7		
3420	F 9	A115	A 8		
3421	D 9	A116	D 9		
3422	D 8	A117	G 8		
3423	F 4	A119	H10		
3424	G 8	A121	B 5		
3425	F 5	A331	E 3		
3427	I 8	A333	D 3		
3428	H 8	A334	I 6		
3430	G 4	A335	H 6		
3431	F 5	A336	G 4		
3432	F 5	A337	G 6		
3433	F 9	A338	I10		
3434	F 9	A339	A 9		
3436	G 9	A340	F10		
3437	C 4	A344	H10		
3440	H 9	A345	C10		
4100	B 2	A347	F 3		
4402	A 8	A348	B 9		
5415	B 6	A349	E 4		
5421	H 5	A350	B 9		
5422	D 7	A502	F 1		
5424	H 4	A588	F 4		
6106	H 9	B229	H10		
6107	H10	B230	E 4		
6420	I 8	B232	B 6		
6421	H 8	B233	G 6		
6422	G 8	B234	H10		
6423	F 6	B236	D 6		
6424	F 5	B237	G 9		
6426	D 4	B238	G 6		
6427	G 8	B239	H 6		
7103	E 3	B241	I 9		
7400	B 8	B242	I 9		
7401	B 8	B243	E 7		
7402	A 8	B244	E 6		
7408	A 5	B245	I 9		
7420	D 3	B247	G 9		

L1 140V DC
L2 12V8 DC
L3 38V6 DC

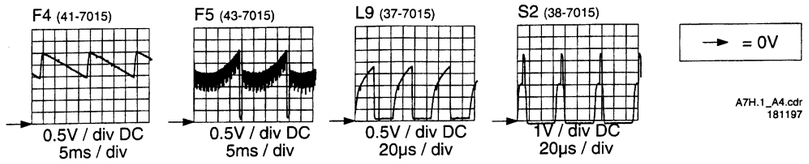


A7H.1_A3.cdr
121197

A4 SYNCHRONISATION



XXX	RADIO	NO RADIO
3345	270	150
6370	---	8V2



A7H.1_A4.cdr
181197

A5

CONTROL

(1) ONLY FOR MULTI PAL/SECAM BG/L/L'/I

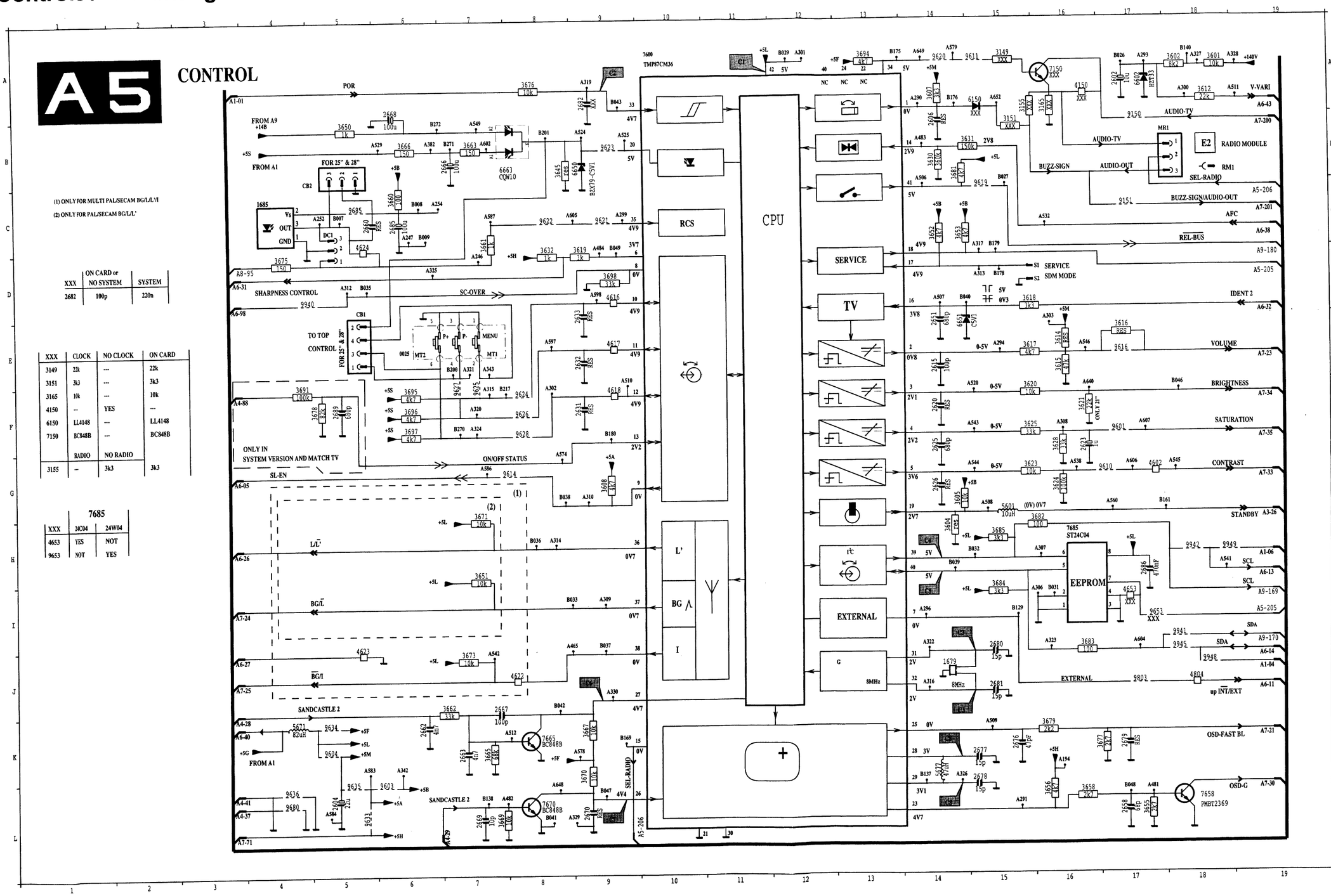
(2) ONLY FOR PAL/SECAM BG/L/L'

XXX	ON CARD or NO SYSTEM	SYSTEM
2682	100p	220n

XXX	CLOCK	NO CLOCK	ON CARD
3149	22k	---	22k
3151	3k3	---	3k3
3165	10k	---	10k
4150	--	YES	---
6150	LL4148	---	LL4148
7150	BC848B	---	BC848B
	RADIO	NO RADIO	
3155	--	3k3	3k3

7685

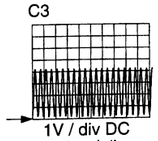
XXX	24C04	24W04
4653	YES	NOT
9653	NOT	YES



C1 5V DC

C2 4V6 DC

C3

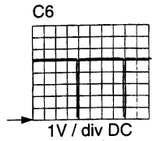


1V / div DC
0.5µs / div

C4 5V DC

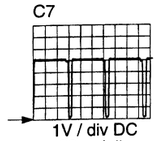
C5 5V DC

C6



1V / div DC
0.5ms / div

C7



1V / div DC
20µs / div

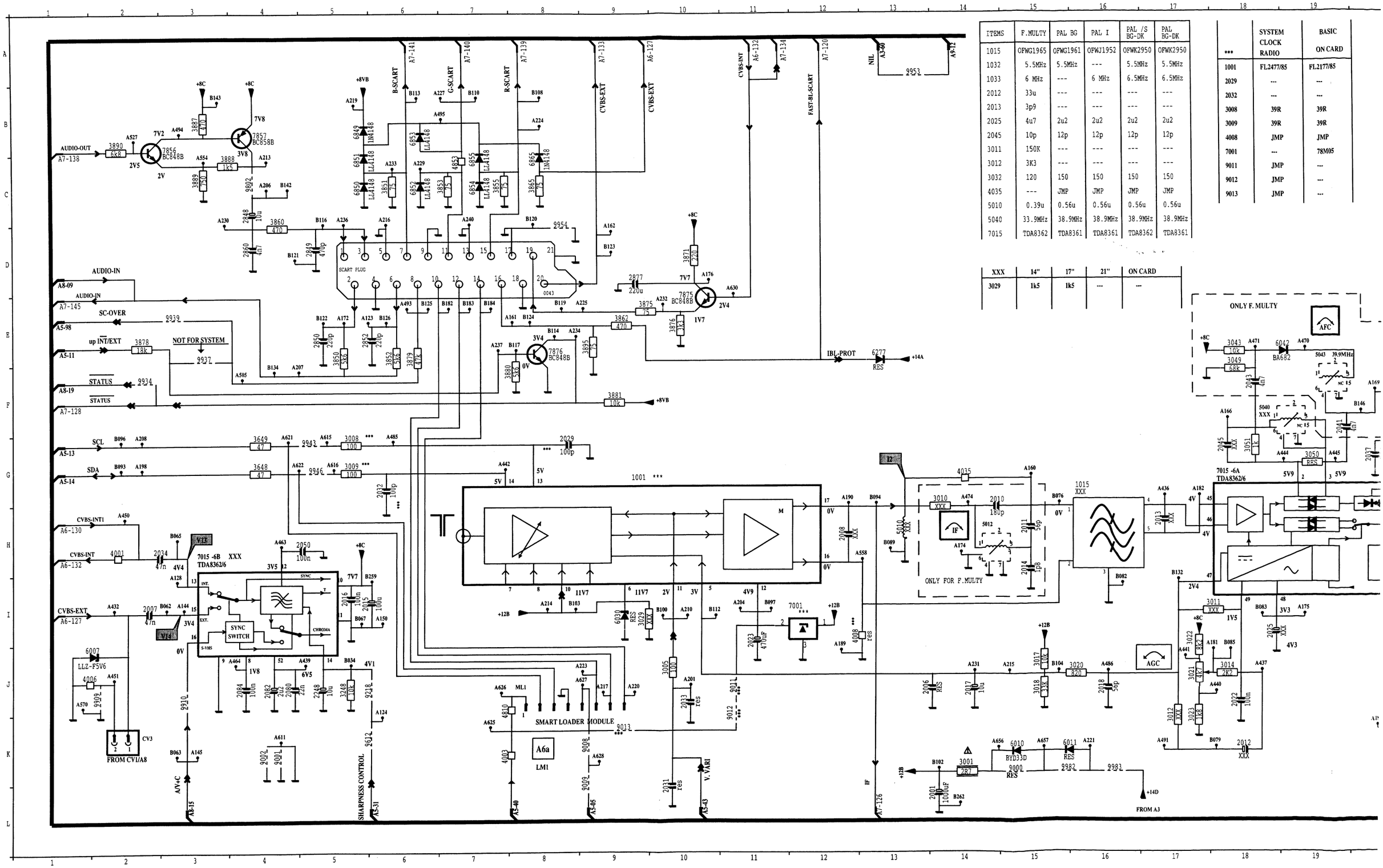
→ = 0V

A7H.1_A5.cdr
121197

ITEMS	F.MULTY	PAL BG	PAL I	PAL /S BG-DK	PAL BG-DK
1015	OFWG1965	OFWG1961	OFWJ1952	OFWK2950	OFWK2950
1032	5.5MHz	5.5MHz	---	5.5MHz	5.5MHz
1033	6 MHz	---	6 MHz	6.5MHz	6.5MHz
2012	33u	---	---	---	---
2013	3p9	---	---	---	---
2025	4u7	2u2	2u2	2u2	2u2
2045	10p	12p	12p	12p	12p
3011	150K	---	---	---	---
3012	3K3	---	---	---	---
3032	120	150	150	150	150
4035	---	JMP	JMP	JMP	JMP
5010	0.39u	0.56u	0.56u	0.56u	0.56u
5040	33.9MHz	38.9MHz	38.9MHz	38.9MHz	38.9MHz
7015	TDA8362	TDA8361	TDA8361	TDA8362	TDA8361

***	SYSTEM CLOCK RADIO	BASIC ON CARD
1001	FL2477/85	FL2177/85
2029	---	---
2032	---	---
3008	39R	39R
3009	39R	39R
4008	JMP	JMP
7001	---	78M05
9011	JMP	---
9012	JMP	---
9013	JMP	---

XXX	14"	17"	21"	ON CARD
3029	1k5	1k5	---	---



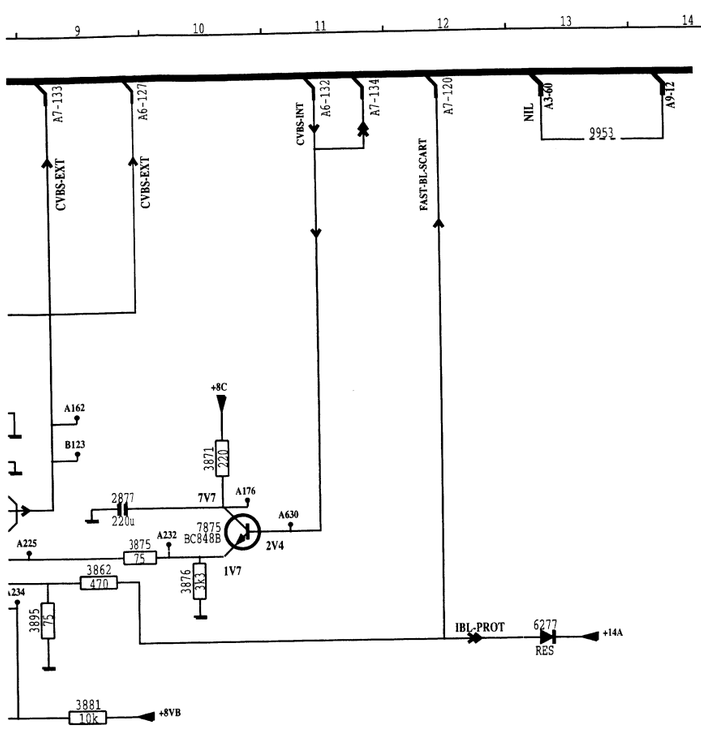
Kanalwähler + ZF + Scart / Tuner + FI + Connexions

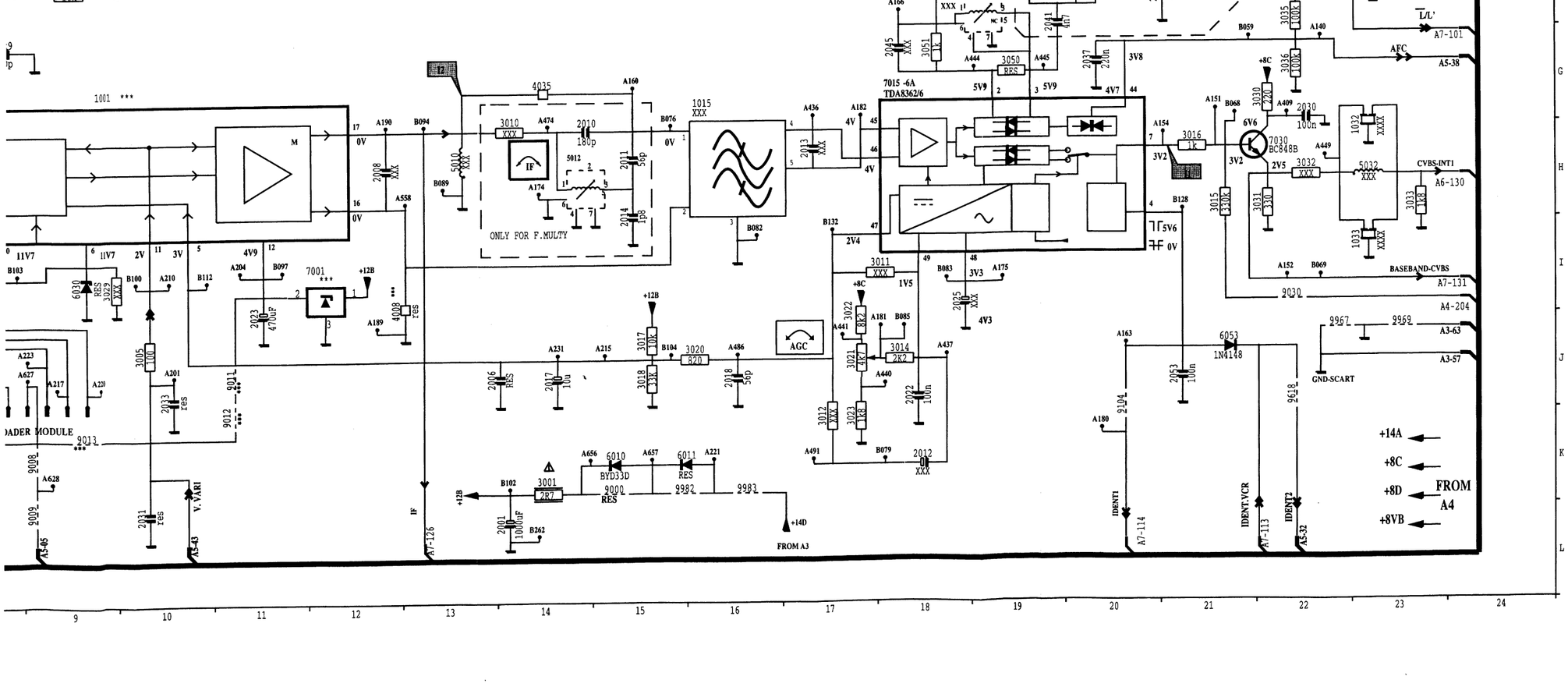
TUNER + I F **A 6**

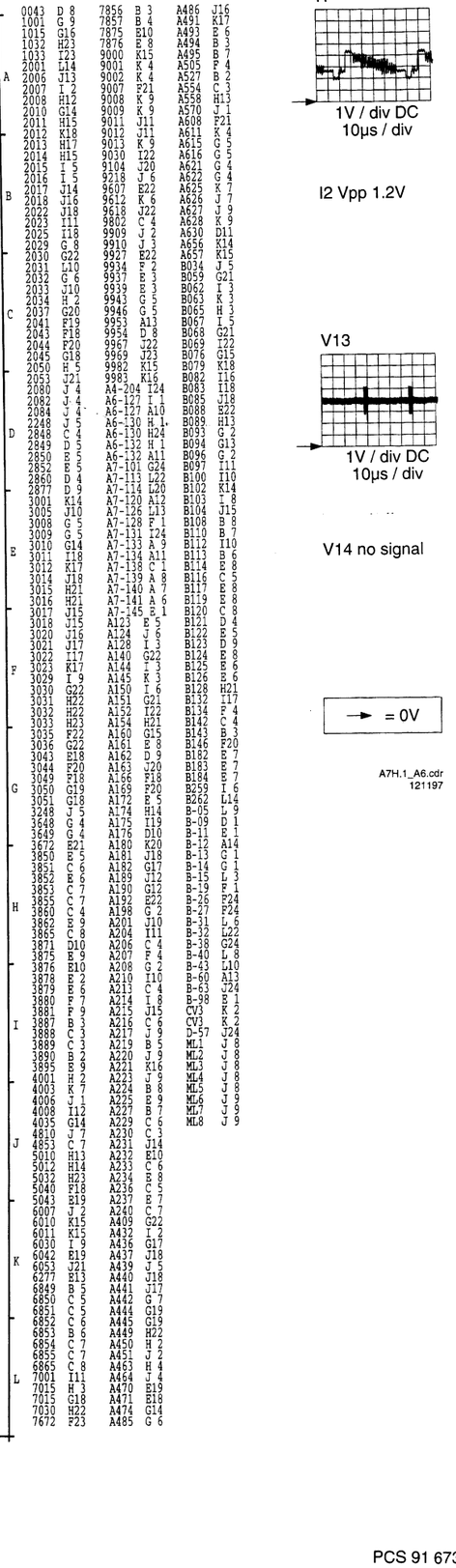
ITEMS	F.MULTY	PAL BG	PAL I	PAL /S BG-DK	PAL BG-DK
1015	OFWG1965	OFWG1961	OFWJ1952	OFWK2950	OFWK2950
1032	5.5MHz	5.5MHz	---	5.5MHz	5.5MHz
1033	6 MHz	---	6 MHz	6.5MHz	6.5MHz
2012	33u	---	---	---	---
2013	3p9	---	---	---	---
2025	4u7	2u2	2u2	2u2	2u2
2045	10p	12p	12p	12p	12p
3011	150K	---	---	---	---
3012	3K3	---	---	---	---
3032	120	150	150	150	150
4035	---	JMP	JMP	JMP	JMP
5010	0.39u	0.56u	0.56u	0.56u	0.56u
5040	33.9MHz	38.9MHz	38.9MHz	38.9MHz	38.9MHz
7015	TDA8362	TDA8361	TDA8361	TDA8362	TDA8361

***	SYSTEM CLOCK RADIO	BASIC ON CARD
1001	FL2477/85	FL2177/85
2029	---	---
2032	---	---
3008	39R	39R
3009	39R	39R
4008	JMP	JMP
7001	---	78M05
9011	JMP	---
9012	JMP	---
9013	JMP	---

XXX	14"	17"	21"	ON CARD
3029	1k5	1k5	---	---







	0043	D 8	7856	B 3	A486	J16
	1001	G 9	7857	B 4	A491	K17
	1015	G16	7875	E10	A493	E 6
	1032	H23	7876	E 8	A494	B 3
	1033	I23	9000	K15	A495	B 7
	2001	L14	9001	K 4	A505	F 4
A	2006	J13	9002	K 4	A527	B 2
	2007	I 2	9007	F21	A554	C 3
	2008	H12	9008	K 9	A558	H13
	2010	G14	9009	K 9	A570	J 1
	2011	H15	9011	J11	A608	F21
	2012	K18	9012	J11	A611	K 4
	2013	H17	9013	K 9	A615	G 5
	2014	H15	9030	I22	A616	G 5
	2015	I 5	9104	J20	A621	G 4
	2016	I 5	9218	J 6	A622	G 4
	2017	J14	9607	E22	A625	K 7
B	2018	J16	9612	K 6	A626	J 7
	2022	J18	9618	G22	A627	J 9
	2023	I11	9802	C 4	A628	K 9
	2025	I18	9909	J 2	A630	D11
	2029	G 8	9910	J 3	A656	K14
	2030	G22	9927	E22	A657	K15
	2031	L10	9934	F 2	B034	J 5
	2032	G 6	9937	F 3	B059	G21
	2033	J10	9939	E 3	B062	I 3
	2034	H 2	9943	G 5	B063	K 3
C	2037	G20	9946	G 5	B065	H 3
	2041	F19	9953	A13	B067	I 5
	2043	F18	9954	D 8	B068	G21
	2044	F20	9967	J22	B069	I22
	2045	G18	9969	J23	B076	G15
	2050	H 5	9982	K15	B079	K18
	2053	J21	9983	K16	B082	I16
	2080	J 4	A4-204	I24	B083	I18
	2082	J 4	A6-127	I 1	B085	J18
	2084	J 4	A6-127	A10	B088	E22
	2248	J 5	A6-130	H 1	B089	H13
D	2848	C 4	A6-130	H24	B093	G 2
	2849	D 5	A6-132	H 1	B094	G13
	2850	E 5	A6-132	A11	B096	G 2
	2852	E 5	A7-101	G24	B097	I11
	2860	D 4	A7-113	L22	B100	I10
	2877	D 9	A7-114	L20	B102	K14
	3001	K14	A7-120	A12	B103	I 8
	3005	J10	A7-126	L13	B104	J15
	3008	G 5	A7-128	F 1	B108	B 8
	3009	G 5	A7-131	I24	B110	B 7
E	3010	G14	A7-133	A 9	B112	I10
	3011	I18	A7-134	A11	B113	B 6
	3012	K17	A7-138	C 1	B114	E 8
	3014	J18	A7-139	A 8	B116	C 5
	3015	H21	A7-140	A 7	B117	E 8
	3016	H21	A7-141	A 6	B119	E 8
	3017	J15	A7-145	E 1	B120	C 8
	3018	J15	A123	E 5	B121	D 4
	3020	J16	A124	J 6	B122	E 5
	3021	J17	A128	I 3	B123	D 8
	3022	K17	A140	G22	B124	B 8
F	3023	K17	A144	I 3	B125	B 6
	3029	I 9	A145	K 3	B126	E 6
	3030	G22	A150	I 6	B128	H21
	3031	H22	A151	G21	B132	I17
	3032	H22	A152	I22	B134	F 4
	3033	H23	A154	H21	B142	C 4
	3035	F22	A160	G15	B143	B 3
	3036	G22	A161	E 8	B146	F20
	3043	B18	A162	D 9	B182	E 7
	3044	F20	A163	J20	B183	E 7
	3049	F18	A166	F18	B184	E 7
G	3050	G19	A169	F20	B259	I 6
	3051	G18	A172	E 5	B262	L14
	3248	J 5	A174	H14	B-05	D 9
	3648	G 4	A175	I19	B-09	D 1
	3649	G 4	A176	D10	B-11	E 1
	3672	E21	A180	K20	B-12	A14
	3850	E 5	A181	J18	B-13	G 1
	3851	C 6	A182	G17	B-14	G 1
	3852	E 6	A189	J12	B-15	I 3
	3853	C 7	A190	G12	B-19	F 1
	3855	C 7	A192	E22	B-26	P24
H	3860	C 4	A198	G 2	B-27	P24
	3862	E 9	A201	J10	B-31	L 6
	3865	C 8	A204	I11	B-32	G22
	3871	D10	A205	C 4	B-38	G24
	3875	E 9	A207	F 4	B-40	D 8
	3876	E10	A208	G 2	B-43	L10
	3878	E 2	A210	I10	B-60	A13
	3879	E 6	A213	C 4	B-63	G24
	3880	F 7	A214	I 8	B-98	P 1
	3881	F 9	A215	J15	CV3	F 2
I	3887	B 3	A216	C 6	CV3	K 2
	3888	C 3	A217	J 9	D-57	J24
	3889	C 3	A219	B 5	ML1	J 8
	3890	B 2	A220	J 9	ML2	J 8
	3895	H 9	A221	K16	ML3	J 8
	4001	H 2	A223	J 9	ML4	J 8
	4003	K 7	A224	B 8	ML5	J 8
	4006	J 1	A225	B 9	ML6	J 9
	4008	I12	A227	B 7	ML7	J 9
	4035	G14	A229	C 6	ML8	J 9
	4810	J 7	A230	C 3		
J	4853	C 7	A231	J14		
	5010	H13	A232	E10		
	5012	H14	A233	C 6		
	5032	H23	A234	E 8		
	5040	E18	A236	E 5		
	5043	E19	A237	E 7		
	6007	J 2	A240	C 7		
	6010	K15	A409	G22		
	6011	K15	A432	I 2		
	6030	I 9	A436	G17		
	6042	E19	A437	J18		
K	6053	J21	A439	J 5		
	6277	E13	A440	J18		
	6849	B 5	A441	J17		
	6850	C 5	A442	G 7		
	6851	C 5	A444	G19		
	6852	C 6	A445	G19		
	6853	B 6	A449	H22		
	6854	C 7	A450	H 2		
	6855	C 7	A451	J 2		
L	6865	C 8	A463	H 4		
	7001	I11	A464	J 4		
	7015	H 3	A470	E19		
	7015	G18	A471	E18		
	7030	H22	A474	G14		
	7672	F23	A485	G 6		

SYSTEM						
ITEMS	FULL MULTY	PAL BG	PAL I	PAL/S BG/DK	PAL BG/DK
1135	5.5 MHz	5.5 MHz	6 MHz	5.5 MHz	5.5 MHz
1136	6MHz	---	---	6.5 MHz	6.5 MHz
3243	10K	---	---	10K	---
3291	JMP	---	---	JMP	---
3654	2k2	---	---	---	---
4114	---	JMP	JMP	JMP	JMP
6128	LL4148	---	---	---	---
6170	BA682	---	---	1K	1K
6171	BA682	---	---	---	---
7015	TDA8362E/N5	TDA8361E/N5	TDA8361E/N5	TDA8362E/N5	TDA8361E/
7170	BC848B	---	---	---	---
7654	BC848B	---	---	---	---
9630	JMP	---	---	---	---

Video (chroma) + Ton /

Video (chroma) + Son

VIDEO + SOUND A 7

SYSTEM

ITEMS	FULL MULTY	PAL BG	PAL I	PAL/S BG/DK	PAL BG/DK
1135	5.5 MHz	5.5 MHz	6 MHz	5.5 MHz	5.5 MHz
1136	6MHz	---	---	6.5 MHz	6.5 MHz
3243	10K	---	---	10K	---
3291	JMP	---	---	JMP	---
3654	2k2	---	---	---	---
4114	---	JMP	JMP	JMP	JMP
6128	LL4148	---	---	---	---
6170	BA682	---	---	1K	1K
6171	BA682	---	---	---	---
7015	TDA8362E/N5	TDA8361E/N5	TDA8361E/N5	TDA8362E/N5	TDA8361E/N5
7170	BC848B	---	---	---	---
7654	BC848B	---	---	---	---
9630	JMP	---	---	---	---

SOUND OUTPUT

ITEM	2W	4W
2196	---	3u3

(1)= NOT PRESENT WHEN 7140 IS USE

(2)= NOT PRESENT IN TXT AND MULTY VFR

"T" VERSION

ONLY SECAM

"NO CLOCK"

FM-SOUND

TO SECOND LS

TO LOUD SPEAKER

FROM A4

= 0V

A7H.1_A7.cdr
131197

V8a
1V / div DC
20µs / div

V5
20mV / div AC
0.5µs / div

V8b
1V / div DC
20µs / div

V11a
1V / div DC
20µs / div

V8c
1V / div DC
20µs / div

V11b
1V / div DC
20µs / div

V9 5V7 DC

A1
20mV / div AC
2ms / div

V7
0.2V / div AC
5ms / div

A2 10V
A5 BG LL' = 0V7
I = 0V

V6
1V / div DC
20µs / div

A3
1V / div DC
0.5ms / div

V10
1V / div DC
10µs / div

A4
0.5V / div DC
0.5ms / div

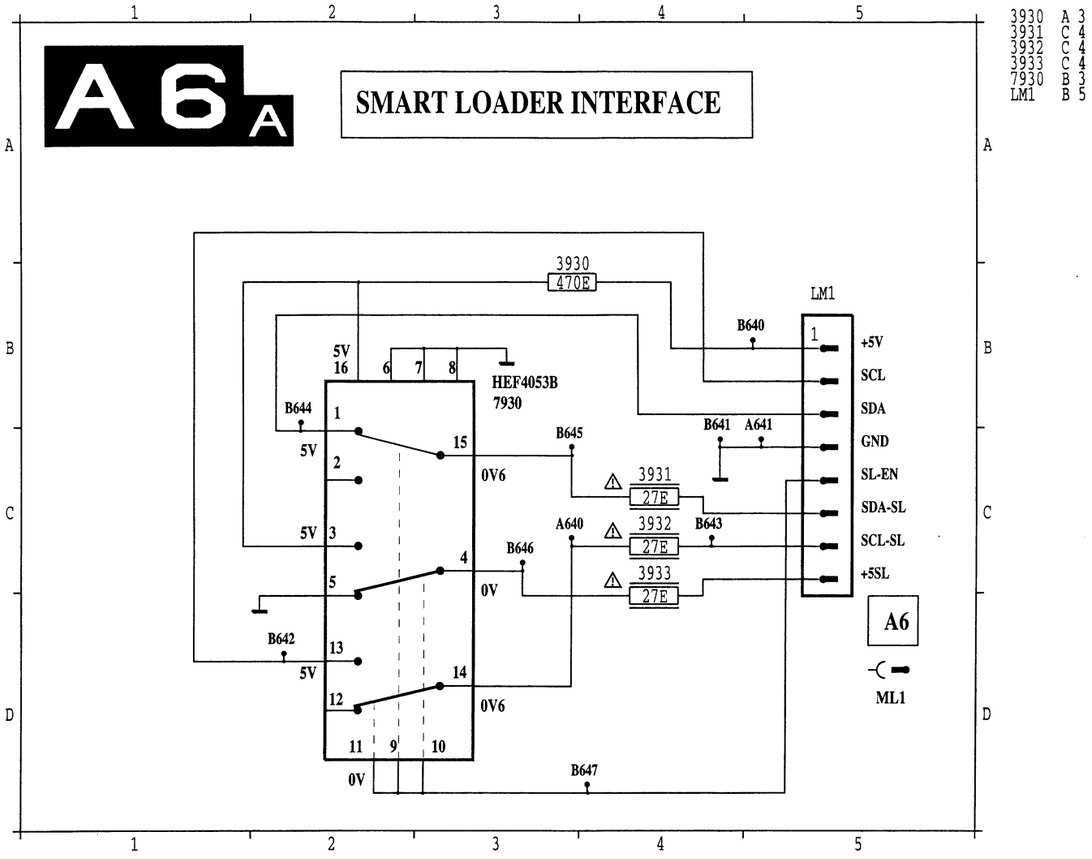
V12a
0.5V / div DC
20µs / div

A6
0.5V / div DC
20µs / div

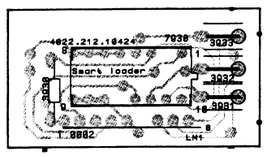
V12b
0.5V / div DC
20µs / div

A7
0.5V / div DC
1ms / div

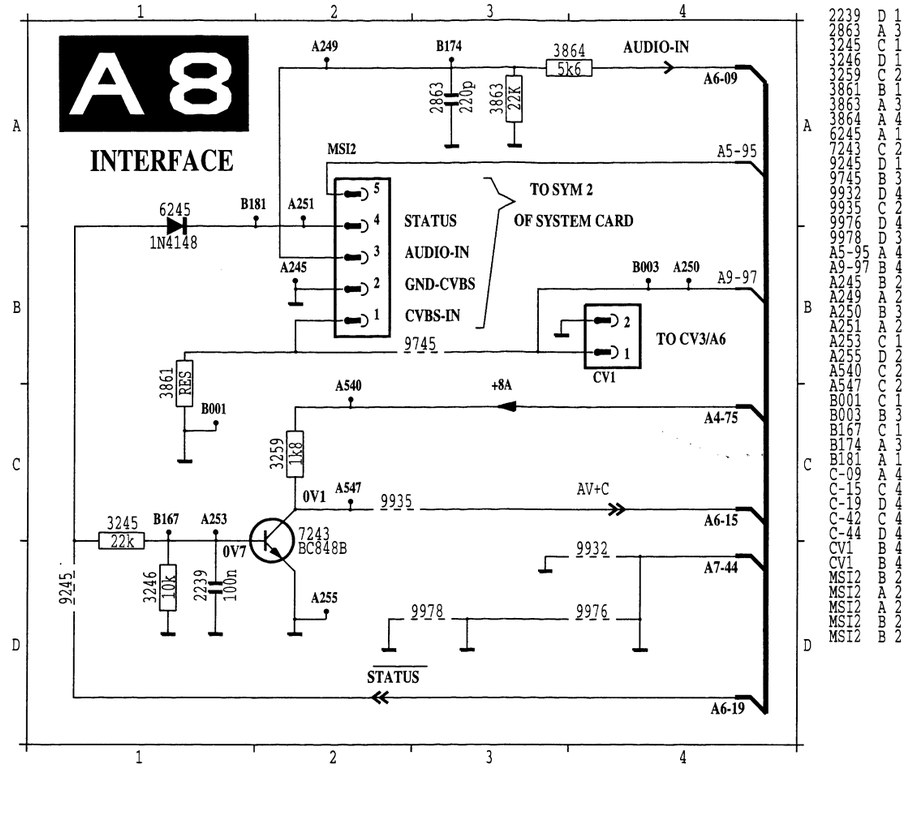
Smart loader interface / Smart lader / Chargeur à mémoire



Smart loader



Interface / Interface / SVSH verbindung



A9 TELETEXT

XXX	14"	17"	21"	21" SYSTEM NO TXT
3740	1k5	1k2	1k2	
3741	1k5	1k2	1k2	
3742	1k5	1k2	1k2	
3749	27	27	27	100
3781	15k	8k2	8k2	
3788	27	27	27	100

XXX	NO SYSTEM NO FAST TEXT	SYSTEM/ON CARD FAST TEXT
3743	---	47k
3744	---	820
3745	---	68
3746	---	100
3762	100	---
3763	100	---
3764	---	100
3765	---	100
3769	---	4k7
3770	---	4k7
7702	---	HEF4066
7740	---	BC848B
7745	---	BC848B
9745	---	JMP
9770	---	JMP
9772	---	JMP

TXT	1PW	1PE	1PND
7700	SAA 5254P/E	SAA 5254P/H	SAA 5254P/E

TXT DECODER +1 PAGE MEMORY

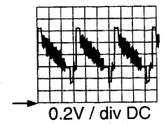
\# COMPONENTS NOT PRESENT IN "SYSTEM NO TXT"

CONNECTOR " MSI 1 " PRESENT ONLY IN "SYSTEM NO TXT"

ONLY IN NORDK VERSION

1701	I 6	A271	I 9
2701	H 5	A272	I 9
2702	I 5	A273	E 9
2703	I 7	A274	B 4
2704	I 7	A275	J10
2705	H 7	A276	I 9
2706	J11	A278	H 6
2707	K14	A279	I10
2711	I 6	A280	I10
2712	H 4	A281	I 6
2713	I 5	A284	I11
2715	I 8	A285	J13
2725	J 8	A286	I10
2726	J 9	A287	I 9
2727	J10	A288	E 6
2732	J 6	A289	I12
2734	I 2	A292	E10
2736	J 4	A295	E 3
2752	B 6	A297	E 9
2771	I 2	A298	I13
2772	I 7	A304	F13
3702	J 5	A305	I14
3704	J12	A311	H 3
3705	H 7	A466	E 6
3706	I11	A467	E 7
3707	G13	A479	H 6
3709	I14	A480	J 5
3713	I13	A513	K 4
3714	I 8	A531	L14
3716	K12	A533	I 8
3718	L13	A534	I 8
3722	K11	A535	I 3
3723	G12	A536	I13
3724	F13	A537	H14
3728	F13	A551	K 7
3729	J 5	A552	K13
3731	J 4	A575	I 3
3732	J 3	A576	J 4
3733	I 3	A577	I 2
3734	K 4	A580	F 9
3735	L 4	A581	F10
3736	I 2	A582	J12
3737	I 2	A585	F 5
3738	J 3	A596	K11
3739	I 4	A603	B 3
3740	I 9	A632	C 6
3741	I10	A633	B 5
3742	I10	A634	B 3
3743	H12	A653	B 8
3744	J 8	A654	B 9
3745	K 8	A655	I 9
3746	J 8	B013	B 6
3749	B 2	B014	J 7
3751	C 5	B015	I 1
3752	B 5	B018	I 4
3760	E11	B019	I10
3761	E11	B020	J 9
3762	E 8	B021	I 8
3763	E 8	B028	I13
3764	D 9	B030	F13
3765	D 9	B127	I14
3768	K14	B133	K14
3769	A 8	B136	I 7
3770	A 7	B139	I12
3781	I14	B148	E 7
3786	F14	B149	D 9
3787	K14	B150	B 4
3788	B 4	B151	J 6
4711	I14	B152	F12
4713	L13	B153	H 3
4715	F13	B156	I 9
4720	J12	B157	I10
4730	G12	B158	I10
4732	K10	B159	H 8
4738	K 9	B163	I11
4770	A 9	B165	E 7
4771	D 7	B185	I 9
4773	K12	B186	B 8
5701	I 6	B187	B 9
5704	I 7	C-10	F15
5734	K 4	C-12	I15
6704	J10	C-16	L 9
6705	F14	C-17	L 9
6751	C 5	C-18	L10
7700	F 5	C-20	L15
7702	B 7	C-22	J 1
7702	B 8	FSE1	B10
7711	I14	FSE1	B10
7713	K13	FSE1	B10
7715	F13	FSE1	B10
7731	I 4	FSE1	B10
7732	I 3	MSI1	G 9
7740	I12	MSI1	G 9
7745	J 7	MSI1	G 9
7751	B 5	MSI1	G10
9701	B10	MSI1	G10
9702	C 6	MSI1	G10
9704	C 6	MSI1	G10
9705	E10	MSI1	G11
9710	I 1		
9711	F10		
9712	F10		
9716	L14		
9750	B 3		
9770	D 5		
9772	A11		
9911	F 4		
9944	E 3		
9965	C 2		
A5-169	E 1		
A5-170	E 1		
A5-180	D 1		
A8-97	L 8		
A053	B 2		
A062	C 6		
A063	A10		
A064	C 6		
A076	D 3		
A248	F11		
A256	I 5		
A259	I 7		
A261	B 6		
A262	J 7		
A263	I 1		
A264	K 4		
A265	H 8		
A266	J 4		
A269	D10		
A270	D11		

T1



0.2V / div DC
20µs / div

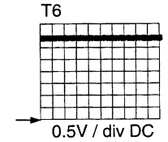
T2 5V DC

T3 4V9 DC

T4 4V9 DC

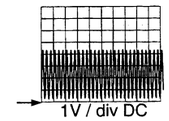
T5 5V DC

T6



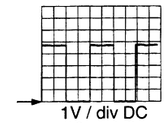
0.5V / div DC
0.5µs / div

T7



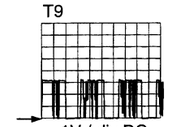
1V / div DC
0.5µs / div

T8



1V / div DC
10ms / div

T9

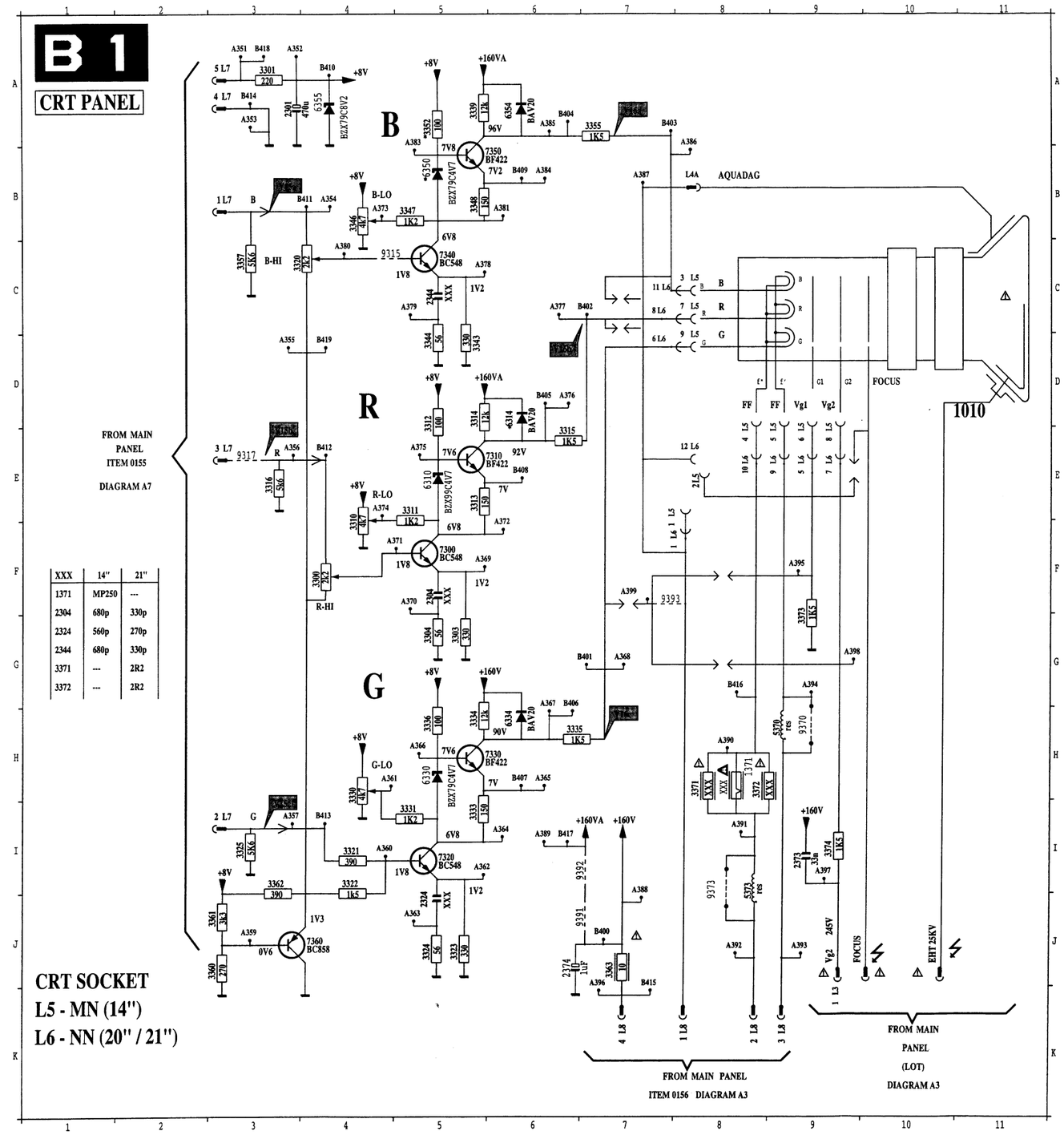


1V / div DC
20µs / div

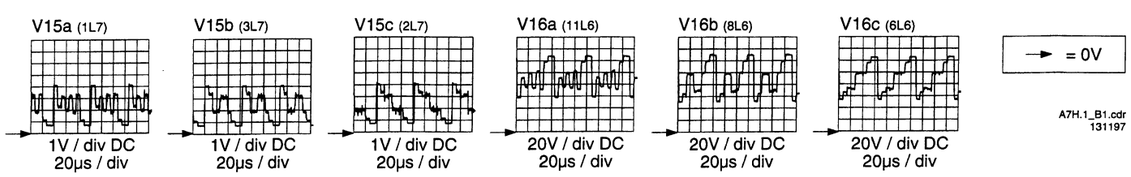
→ = 0V

A7H.1_A9.cdr
131197

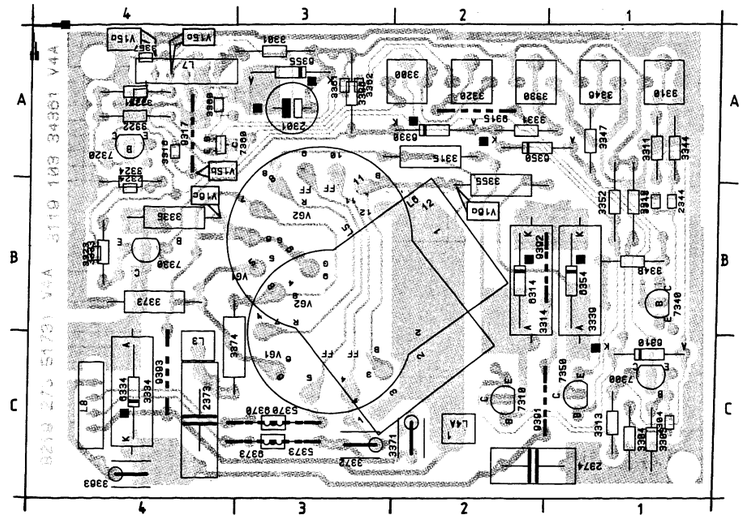
CRT / Bildrõhren Platte / TRC



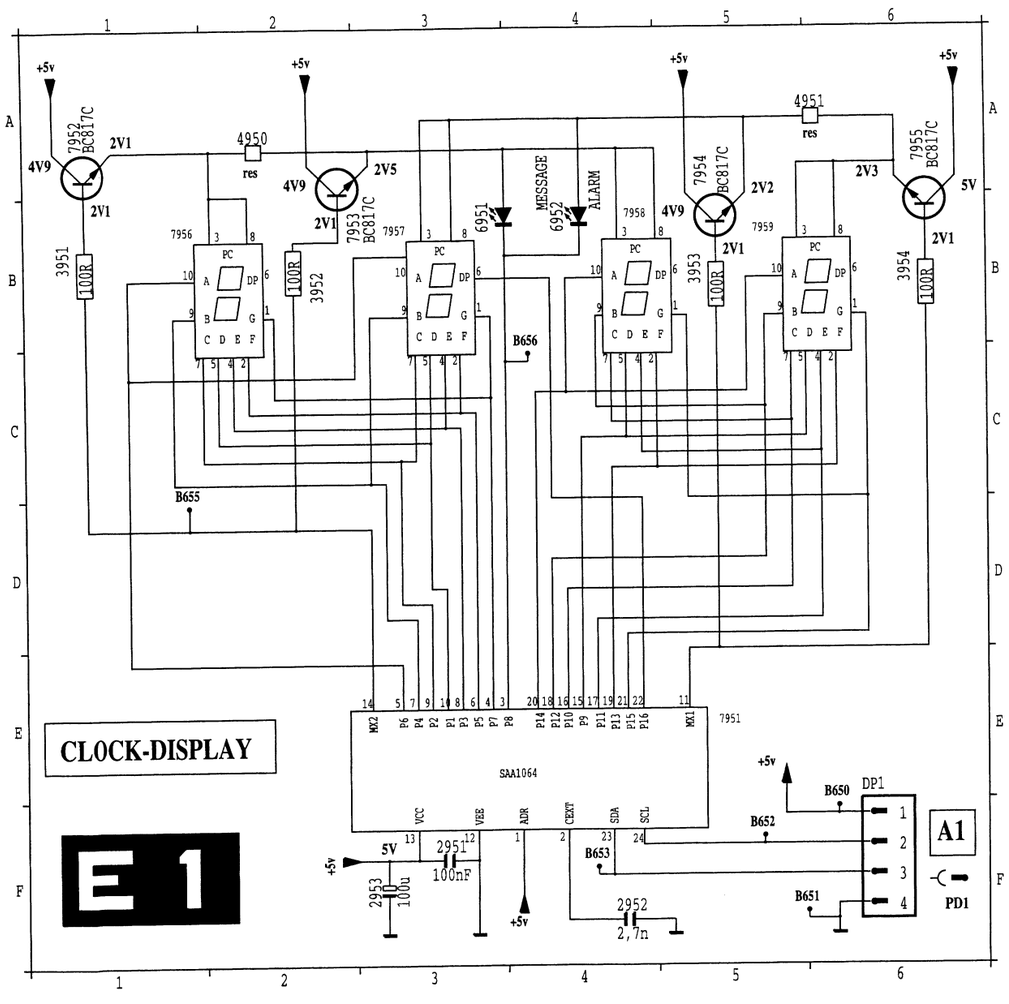
XXX	14"	21"
1371	MP250	---
2304	680p	330p
2324	560p	270p
2344	680p	330p
3371	---	2R2
3372	---	2R2



2301	A3	3311	A1	3325	A4*	3348	B1	3374	C3	7310	C1	9392	B1		
2304	C1*	3312	B1	3330	A1	3352	B1	5370	C3	7320	A4	9393	C4		
2324	B4*	3313	C1	3331	A1	3355	B7	5373	C3	7330	B4				
2344	B1*	3314	B1	3333	B4	3357	A4*	6310	C1	7340	B1	L3	C3		
2373	C3	3315	A2	3334	C4	3360	A3*	6314	B1	7350	C1	L4A	C2		
2374	C1	3316	A4*	3335	B4	3361	A2*	6330	A2	7360	A3*	L5	C3		
3300	A2	3320	A2	3336	A2	3362	A2*	6334	C4	9315	A2	L6	B2		
3301	A3	3321	A4	3339	B1	3363	C4	6350	A1	9317	A3	L7	A4		
3303	C1	3322	A4	3343	B1*	3371	C2	6354	B1	9370	C3	L8	C4		
3304	C1	3323	B4*	3346	A1	3372	C2	6355	A3	9373	C3	*=Chip component			
3310	A1	3324	B4	3347	A1	3373	B4	7300	C1	9391	C1				

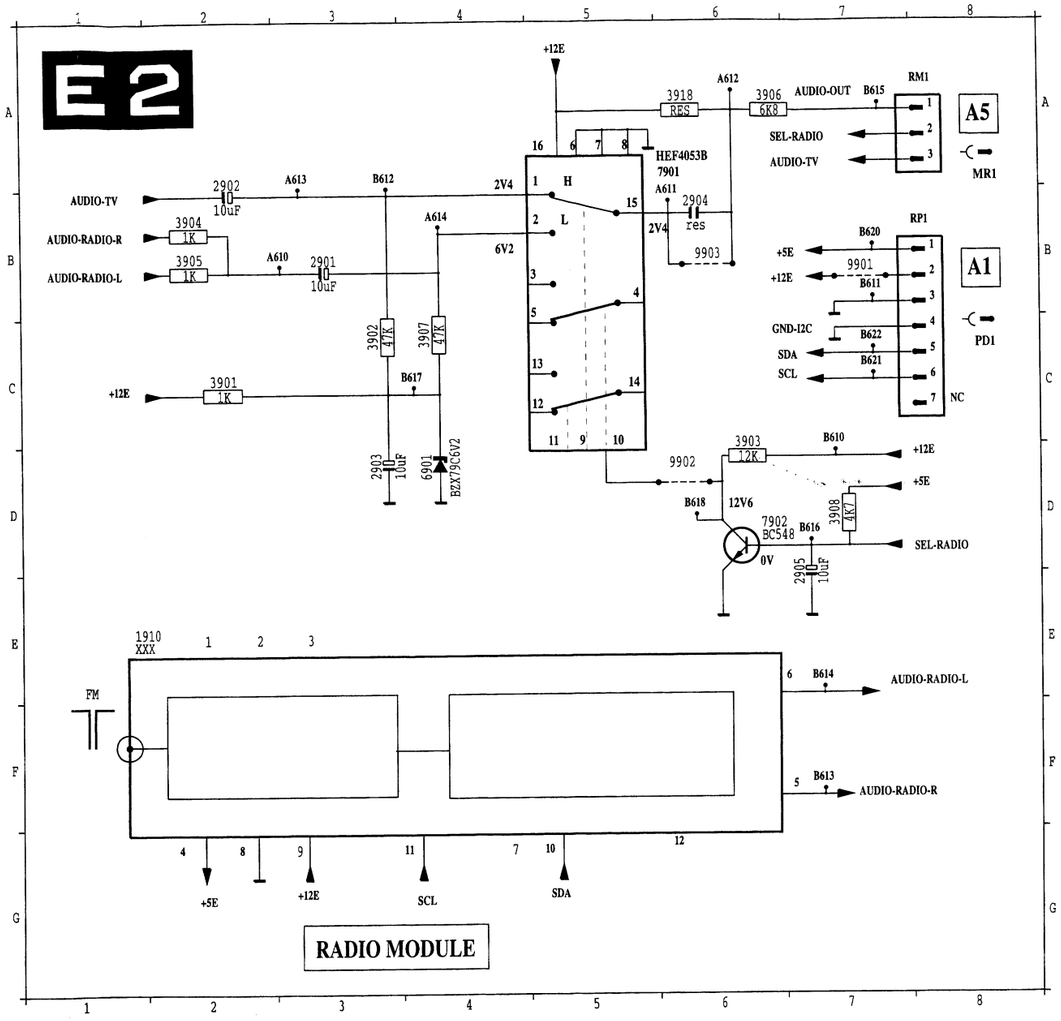


Clock-display / Uhr-Platte / Platine d'horloge



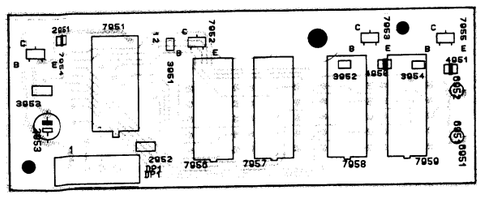
2951 F 3
2952 F 4
2953 F 3
3951 B 1
3952 B 2
3953 B 5
3954 B 6
4950 A 2
4951 A 6
6951 B 3
6952 B 4
7951 E 5
7952 A 1
7953 B 3
7954 A 5
7955 A 6
7956 B 1
7957 B 3
7958 B 4
7959 B 5
B650 F 6
B651 F 5
B652 F 5
B653 F 4
B655 C 1
B656 B 4
DP1 F 6
DP1 F 6
DP1 F 6
DP1 F 6

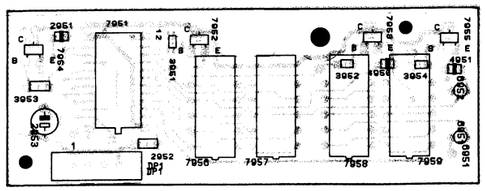
Radio-module / Radiomodul / Module de radio



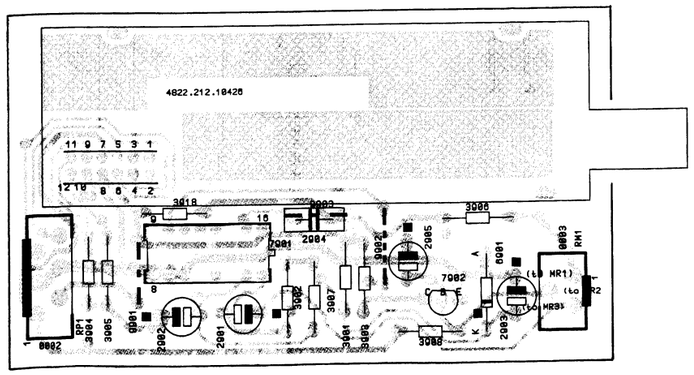
1910 E 1
2901 B 3
2902 A 2
2903 D 3
2904 B 6
2905 D 7
3901 C 2
3902 C 3
3903 D 6
3904 B 2
3905 B 2
3906 B 6
3907 C 4
3908 D 7
3918 A 6
6901 D 4
7901 A 6
7902 D 7
9901 B 7
9902 D 6
9903 B 6
A610 B 3
A611 B 6
A612 A 3
A613 A 3
A614 B 4
B610 C 7
B611 A 3
B612 A 7
B613 F 7
B614 E 7
B615 A 7
B616 D 7
B617 C 4
B618 D 6
B620 B 7
B621 C 7
B622 C 7
RM1 A 7
RM1 A 7
RM1 A 7
RP1 C 7
RP1 C 7
RP1 C 7
RP1 C 7
RP1 B 7
RP1 B 7
RP1 B 7

Clock panel





Radio module



8. Electrical adjustments

1. Adjustments on the main panel (Fig. 8.1)

1.1 Horizontal centring

Is adjusted with potentiometer **R3354**.

1.2 Picture height

Is adjusted with potentiometer **R3407**.

1.3 Focusing

Is adjusted with the focusing potentiometer in the line output transformer.

1.4 IF filter (only for sets with SECAM LL' reception possibility)

Connect a signal generator (e.g. PM5326) via a capacitor of 5p6 to pin 17 of the tuner and adjust the frequency for 40.4 MHz.
Connect an oscilloscope to pin 1 of filter 1015.
Switch on the set and select system Europe (BG/L is "low" for BGIDK reception).
Adjust **L5012** for a minimum amplitude.

1.5 AFC

a. For sets with SECAM LL' reception possibility:
Connect a signal generator (e.g. PM5326) as indicated in point 1.6. Connect a voltmeter to pin 44 of IC7015/6A. Adjust the frequency for 33.9 MHz and select system France (L/L' is "high" for L' reception). Adjust **L5040** for 3V5 (DC).
Next adjust the frequency for 38.9 MHz and select system Europe (L/L' is "low" for BGILDK reception). Adjust **L5043** for 3V5 (DC).

b. For sets without SECAM LL' reception possibility:
Connect a signal generator (e.g. PM5326) as indicated above and adjust the frequency for 38.9 MHz (for PAL I at 39.5 MHz). Connect a voltmeter to pin 44 of IC7015/6A. Adjust **L5040** for 3V5 (DC).

1.6 RF AGC

If the picture of a strong local transmitter is reproduced distorted, adjust potentiometer **R3021** until the picture is undistorted.

Or: Connect a pattern generator (e.g. PM5518) to the aerial input with RF signal amplitude = 1 mV.
Connect a multimeter (DC) at pin 5 of tuner.

Adjust **R3021** so that voltage at pin 5 of tuner is 7V5 ± 0V5 (DC).

2. Adjustments on the CRT panel (Fig. 8.1)

2.1 Vg2 cut-off points of picture tube

Apply a pattern generator (e.g PM5518) and set it to a white raster pattern.
Adjust contrast and Vg2 at minimum (Vg2 with potentiometer in line output transformer to the left).
Adjust brightness until the DC voltage across potentiometer 3320 is 0V.
Adjust **R3346** (B), **R3330** (G) and **R3310** (R) for a level of 115V on the collectors of transistors 7350, 7310 and 7330.
Adjust **Vg2** potentiometer until the gun that first emits light is just no longer visible. Adjust the two **other** guns with the respective controls (3346, 3330 or 3310 or for until just no light will be visible.

2.2 Grey scale (white D)

Apply a test pattern signal and adjust the set for normal operation. Allow the set to warm up for about 10 minutes.
Adjust **R3300** and **R3320** (R3263 and R3273 for 20") until the desired grey scale has been obtained.

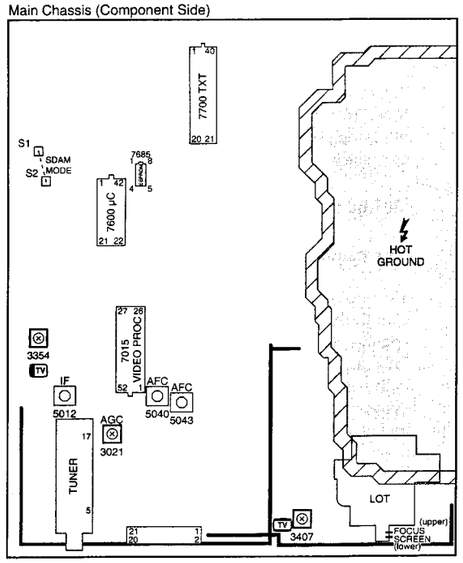


Fig. 8.1

9. Circuit description

For the description of the audio and video processing circuits see the description in the AA5 AA manual.
For the description of the clock panel (Diagram E1), the radio module (Diagram E2) the TXT part (Diagram A9) and the smart loader panel (Diagram A6a), see AA5H.1 AA Chassis manual.

1. Description of the power supply and the deflection part

In the A7H.1 AA chassis all power circuits are mounted on the main carrier panel.
The power supply can be divided in 2 parts:
- External power supply (not switched off by power switch).
- Main power supply (switched off by power switch).

• External power supply (with transformer item 5502).
This power supply is equal to the switched mode power supply as already introduced in the AA5H.1 chassis. Supply functions of the "Extra power supply" in AA5H.1 chassis are in A7H.1 taken over by the External power supply.

• Main power supply (with transformer item 5500) and deflection.
This power supply and deflection are the same ones as used in L6.1 and L6.2 chassis.

Warning: **For this power supply is valid that the +96V supply for the line output stage is not mains isolated. And therefore the line output stage and horizontal deflection coil connections on the CRT are also not mains isolated.**

Remark: With this supply single isolated picture tubes can be used.

For a description of the main power supply and belonging deflection circuit see below.

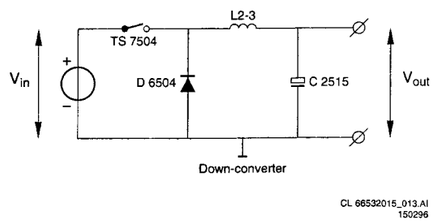


Fig. 9.1

1.1 Principle of the down-converter (Fig 9.1)

The main power-supply is a self-oscillating down converter with an auxiliary winding to help the FET to switch.

When switch TS7504 is closed, the voltage on L2-3 is V_{in}-V_{out}. During this time, energy is stored in the coil and energy is delivered to the load. When switch TS7504 opens, the energy stored in the coil will be stored in the output capacitor (C2515). This is due to the fact that the current through the coil has to decrease linear. When the switch is open the current is floating through D6504, L2-3 and C2515. By controlling the duty-cycle of the switch, the output voltage can be regulated.

1.2 Start-up (see diagram A1)

When the switch TS7504 is closed, the input voltage is placed over winding 2-3 of transformer 5500, which acts as coil L2-3 in Fig 8.1. Via resistors R3513,R3518 and R3512 the switch is turned on for the first time. Zener diode D6502 prevents that the Ugs of the FET becomes higher than 15V. When the input voltage is on winding 2-3, there is also a voltage on winding 1-2. Via winding 1-2 the correct switching voltage is obtained. The DC-part of this voltage is blocked by capacitor C2503.
Diode D6510 acts as a protection in start-up and in short-circuit situations. During start-up the output capacitor C2515 is empty. It takes a relative long time to charge the gate to a voltage high enough to switch on the FET. This is due to the fact the diode D6510 is conducting. When this diode is conducting, the current that would normally flow into the gate of the fet to switch on the FET, is now flowing into C2515. In this way a smooth start-up is guaranteed.

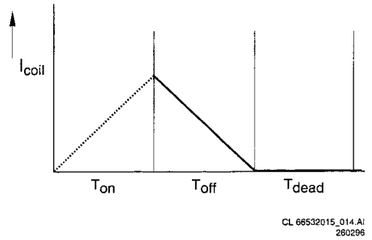


Fig. 9.2

1.3 General way of working (Fig 9.2)

The state of the power-supply can be divided into three areas (see Fig. 9.2):
- *T-on;* In this state the FET is conducting and energy is stored in the coil and in the output capacitor.
- *T-off;* In this state the fet is non conducting and the energy stored in the coil is fed to the output capacitor.
- *Tdead;* Fet is out of conduction and there is no energy in the coil.

Circuit description

T-on; In the T-on state, switch TS7504 is switched on. When the switch is on the voltage over resistors R3514-R3515 is a direct measure for the current through winding 2-3. This is a negative voltage. When this voltage becomes below a certain level, TS7501 starts conducting and will switch off the fet. In this way it is prevented that the coil can go into saturation. This could be the case when the output voltage is very low. (long on time of the FET). When the output-voltage becomes too high during T-on the FET will be switched off. (see Output-voltage regulation)

T-off; Due to the stored energy a current will start to flow through D6504, C2515 and winding 2-3. Due to the fact that the current is flowing through this circuit, a voltage with reverse polarity is on winding 1-2. In this way the fet remains off until the current through winding 2-3 reaches zero. Now a new cycle will start. The fet will be switched on and all starts over again.

T-dead; If the output voltage is too high (for example in a low load situation) the FET remains off till the output-voltage is not to high anymore.

1.4 Output voltage regulation

This is done by the circuit D6501, R3509, TS7502, R3505, R3507, R3510. Transistor TS7502 can only conduct when the voltage on the base is 0V7 lower than the voltage the voltage on the emitter. This means that the voltage drop over resistors R3505 and R3507 should be 5V6 (zenerdiode) + 0V7(base-emitter). This is reached when the output voltage exceeds the 100V. Now transistor TS7502 starts conducting, which brings transistor TS7501 in conduction. As a consequence the gate voltage of the fet becomes very low and the fet stops conducting. As long as the output voltage is too high the fet stays out of conduction.

2. Protections

2.1 Overvoltage protection

A disadvantage of a down converter is that if the switch becomes a short-circuit, the output voltage will increase to the input voltage. This could damage circuits. In this power-supply there is a protection to prevent this. If the output voltage becomes higher than 130V, zener diode D6514 starts to conduct. The Vin will be short circuited. This will blown the main fuse 1501 and protect in this way all the other circuits.

2.2 Short-circuit and start-up protection

The short-circuit protection works the same as the start-up protection. If the output-voltage is very low in case of a start-up or a short-circuit condition, The gate will be charged very slowly due to the fact that zenerdiode D6510 is conducting. So the current is not only charging the gate but is also flowing into the output capacitor. In this way it takes a few milliseconds to switch on the fet. Diode D6510 takes also care that the fet never remains in his power consuming (linear) area.
If the output voltage is very low, it also takes a large time before the current through winding 2-3 reaches zero.
The power supplied to the circuit is in this way very low and protects in this way the circuit.

2.3 Other output voltages

The output voltages +8Sb,+14V +9S and +5S and +5G are made by winding 5-6. During the time that the FET TS7504 is not conducting, energy is transformed to this winding (flyback principle) and the voltages mentioned above are created. From the +9S, the +5S voltage is derived. This voltage is stabilized by transistors TS7505, TS7500 and zenerdiode D6500. D6500 is the reference voltage and TS7505 is delivering the current. When zenerdiode D6500 starts conducting, the voltage over resistor R3502 becomes high and a POR signal is created.

3. Degaussing

R3516 is a dual PTC (2 PTC's in one housing). After switching "on" the set, the PTC is cold, so low ohmic. This makes the degaussing current high. After degaussing the PTC is heated, so high ohmic. This makes the degaussing current low. After degaussing the PTC remains heated by the mains.

4. Line-circuit (Diagram A3)

The primary side of the line-circuit and the deflection coil are connected to the hot earth. The driver-circuit contains an opto-coupler to create isolation between the low-signal parts and the mains. The optocoupler is driven by pin 37 of IC7015-6E via transistor TS7103.

When TS7103 is not conducting,(the LED of the opto-coupler is also out of conduction) TS7421 is also not conducting. In this way TS7422 will conduct and the 96V is placed over winding 2-1 of the LOT. A voltage over winding 2-1 of the LOT will cause a voltage over the windings 8-10, 6-10 and 9-10. Now energy will be transformed from the primary to the secondary-side and charge capacitors C2424 and C2425.

Circuit description

C2430 will be charged to the difference of the +40D and +14D (=26V) when TS7422 is conducting. When TS7422 stops conducting, the voltage of pin 8 of the LOT will become very negative. This forces C2430 to be charged to 26V plus the absolute value of pin 8. When TS7422 starts conducting again the voltage of pin 8 of the LOT will increase and so the voltage on the anode of D6422. In this way the 160V is created. This means that during the off-time of TS7422, C2430 is charged and during the on-time of TS7422, the energy in C2430 is given to C2426.

When transistor TS7103 conducts, the LED of the opto-coupler will be activated. This causes the transistor of the opto-coupler to conduct, which drives TS7421 in conduction. This brings TS7422 out of conduction. Due to this construction, this circuit is protected against missing line-drive pulses. When a line-drive pulse is missed, the line-transistor stays out of conduction, due to the fact that the diode of the opto-coupler is forced into conduction by TS7103. In this way nothing can be damaged when there is no line-drive.
Winding 4-3 is an extra winding to help TS7422 to switch.

On the secondary-side of the LOT there is a circuit consisting of TS7423, R3422, R3433, R3434, C2431 and C2432. This circuit creates a pulse when TS7422 switches off. This pulse indicates that horizontal flyback takes place. This information is fed to IC7015-6E to blank the picture.

4.1 Stand-by

The standby signal from the mC is low in case of stand-by. Now TS7103 is brought into conduction by R3112. As mentioned before this will switch off the line-output stage completely.

5. Deflection

5.1 Horizontal deflection

The voltage over capacitor C2422 is the same as the voltage over C2515 (96V, see Diagram A1). When TS7422 is conducting this voltage is placed over the horizontal deflection coil. This causes a linear increasing current through this coil.
In this way deflection is created. When TS7422 switches of flyback takes place and it starts all over again. L5424 is used for linearity correction.

5.2 Vertical deflection

Vertical deflection is based on a balance amplifier.
Or TS7401 or TS7402 is conducting. This depends on the signal V-drive. If V-drive is high TS7401 conducts and the voltage of C2401 is placed over the deflection coil. Now the picture is written. When V-drive is low, TS7402 conducts and the +40V supply voltage minus the voltage over C2401 is placed over the deflection coil. Flyback takes now place.
In this way deflection is generated.
R3407 is used to adjust the vertical shift. With this resistor the level of the signal VFB is adjusted. R3402 and C2404 are used to damp oscillation of the deflection coil with his parasitic capacitance.
The signal NIL from the mC is used to create a non-interlaced mode. This is done by creating a small DC current through the deflection coil.

PHILIPS Hotel TV

This product has been especially designed by Philips for institutional applications. These istruction for use are a quick reference for installers. A complete instruction for use is also available. For more information ask the nearest Philips branch office.

TV INSTALLATION

The installation requires the remote control RC 8611.

Place the TV on a solid base.
Leave at least 5 cm around each side of the TV for ventilation.
To prevent any faults and unsafe situations, do not place any objects on top of the sets.
The TV can only operate at a mains voltage of 220/240 V~, 50 Hz.

- Select the last TV channel available by pressing TV − or +.
- Press the ◿/P button on the local keyboard than press the ◿− button on the remote control for more than 4 seconds.

▹ Installation menu appears.
Use the cursor up and down to navigate into the menu lines. Use the cursor left and right to select the menu options. Use the digit button to insert numbers.

MENU

- **Language.**
  To select the menu and the On Screen Display language: [ENGLISH - FRANCAIS - DEUTSCH].
- **Configuration.**
  Attention : The configuration of the TV is set by Philips, changing the configuration may change the availability of the menu options and the featuring of the TV.
  TV system: To choose the TV system [SINGLE - UHF - MULTI F].
  Teletext: To enable the teletext [YES - NO].
  Clock: To enable the clock [YES - NO].
  Radio: To select the radio type [INT (internal) - EXT (external) - NONE].
  Interface system: To enable the interface of the system [YES - NO].
- **Number of programs**
  TV: To assign the max. number of TV programs [1-99].
  INFO: To assign the max. number of info programs [1-99].
  RADIO: To assign the max. number of radio programs [1-99].
  Note: Radio available only if Configuration-Radio set to INT or EXT.
  PAY TV: To assign the max. number of PAY TV programs [1-99].
  Note: PAY TV available only if Configuration-Interface system set to YES.
  The total max. number of programs available is 120.
- **TV installation**
  System: To select the TV system: [EUROPE, FRANCE,UK].
  Note: System appears only if "MULTI F" is selected in the Configuration menu.
  Search: To search for the video channels or to input the frequency digit.
  Fine tune: To adjust the tuning when a video channel is not well tuned.
  Programme: To assign a video channel to a TV or INFO or PAY TV program.
  More: More program options
  - **Protection**: To set the program protection [YES - NO].
  - **Picture Mute**: To blank the picture of a video program [YES - NO].
  - **Sound Mute**: To mute the sound of a video program [YES - NO].

  Store: To store the selections.
- **Radio install**
  Note: Available only if configuration radio set to INT or EXT.
  Search: To search for the radio channels or to input the frequency digits.
  Programme: To assign a radio channel to a radio program.
  Protection: To set the program protection [YES - NO].
  Store: To store the selections.
- **Parameter setting**
  Initial setting
  Switch on channel: To select the switch on program [TV - INFO].
  Switch on volume: To set the switch on volume [00 - 63].
  Display standby: To set the light intensity of the led display in standby mode [1-5].
  Display on: To set the light intensity of the led display in TV on mode [1-5].
  Welcome message: To display the welcome message [YES - NO].
  To insert the message use the cursor up and down to select the character and the cursor left and right to navigate.
  Picture setting
  To set picture settings (low-normal-high) that can be recalled with the PICTURE button on the RC.
  Block function
  Hotel mode: To enable maximum volume, block local, free protected options [YES - NO].
  Maximum volume: To set the max. volume limitation [00 - 63].
  Block local: To lock the local controls of the TV.
  Free protected: To free at once all the protected programs.
  Time setting: To set the time of the clock.
  Time downloading: To link the time of the clock to the teletext of the selected program (TV-INFO-PAY TV).

Tips

- **To quickly install the TV**
  Philips has designed also other tools for quick installation, like the SMART-LOADER or the ACI. For more information ask the nearest Philips branch office.

- **To clean the TV**
  Clean the TV using a slightly damp chamois leather.
  Never use aggressive cleaning agents.

- **Problems with no solution:**
  Switch your TV off and on again with the ⏻ button.
  Never attempt to repair a defective TV set yourself.
  Switch off the TV and call your dealer or TV-technician when nothing helps or when:
  - A white horizontal stripe appears across the whole screen.
  - The red lamp below the screen starts blinking when no buttons are pressed on the remote control.

Environmental information

Your TV contains material which can be recycled and reused. At end of life specialized companies can dismantle the discarded TV to concentrate the reusable materials and to minimize the ammount of materials to be disposed off.
Please find out about local regulations on disposal of your old TV set.

Televisions consume energy in the stand-by mode. Energy consumption contributes to air and water pollution. We advice you to switch off your TV overnight instead of leaving it on stand-by. You save energy and the picture tube is demagnetised which maintains good picture quality .

11. List of abbreviations

AV+C	AV switch signal (0V antenna, 4V SVHS, 8V scart)
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AMSOUND/ AUDIO IN	AM modulated sound signal or audio extern in
AQUADAG	Conducting layer on rear side surface of CRT
AUDIO-IN	Extern Audio in via scart socket
AUDIO-OUT	Audio out via scart socket
B	Blue signal
B.SCART	Blue signal (via scart)
BASEBAND-CVBS	Output signal of video detector
BEAM-INFO	Beam current information
BG/1	Switch signal for PAL BG and PAL I
BG/L	Switch signal for PAL BG and SECAM L
BG/L'	Switch signal for PAL BG and SECAM L "
BRIGHTNESS	Brightness control
B-TXT	Blue signal via teletext
C	Chrominance signal
CONTRAST	Contrast control
CVBS-EXT	External CVBS - signal (via scart)
CVBS-INT	Internal CVBS-signal (input via scart)
CVBS-INT1	Internal CVBS-signal (via tuner)
CVBS-TXT	CVBS-signal for teletext
EHT	Extra high tension for CRT (25KV)
FAST BL.TXT	Fast blanking via teletext
FAST.BL.SCART	Fast blanking via scart
ff	filement voltage for the crt
FOCUS	Focus voltage for the CRT
G	Green signal
G.SCART	Green signal via scart
G-TXT	Green signal via teletext
H-DRIVE	Horizontal drive control
HFB	Horizontal feedback
IDENT.VCR	Status signal "high in the external mode. This signal blocks the IDENT of IC7015-6A temporarily, so the TV is not switched off after 15min..
IDENT1	IDENT-signal derived from IC7015-6A, that is used for suppressing of the AM-sound signal if no CVBS is present.
IDENT2	Status signal of IC7015-6B. Low CVBS present. High CVBS not present.
IF	Intermediate frequency
INT/EXT	Switch signal Internal/external
L/L'	Switch signal SECAM L/SECAM L'
L/L'	Switch signal SECAM L/SECAM L'
NIL	Non Inter Lace
ON/OFF STATUS	On/off status signal
OSD-FAST BL	Fast blanking via OSD
OSD-G	Green signal via OSD
POR	Power on reset
R	Red signal
R.SCART	Red signal via scart
REL-BUS	Release bus signal from system panel.
R-TXT	Red signal via teletext
SANDCASTLE1	Sandcastle-signal 1
SANDCASTLE2	Sandcastle -signal 2
SATURATION	Saturation
SC-OVER	Scart-signal suppression
SCL	Clock line IIC-bus
SDA	Data line of the IIC-bud
SDM	Service Default Mode
SHARPNESS CONTROL	Sharpness control
SL-EN	Signal to select the smart loader
STANDBY	Standby-switch signal
STATUS	Switch signal. High CVBS via scart. Low internal CVBS
V.-DRIVE	Vertical drive
VFB	Vertical feedback
VG2	VG2 voltage
VOLUME	Volume control
V-VARI	Tuning voltage
Y	Luminance signal

Notes:

12. Spare parts list / Stükliste / Liste des pièces

Main carrier [A1,A3-A9]

Various

▲	4822 276 12597	Mains switch	
	4822 276 13307	Operating switch assy	
▲	4822 265 30389	Con. 2P (0041)	
▲	4822 265 40596	Con. 2P (0050)	
▲	4822 265 30389	Con. 2P (0051)	
▲	4822 265 20709	Con. 2P (0061)	
	4822 264 40207	Con. 3P (0040)	
	4822 264 40239	Con. 3P (0063)	
	4822 290 40284	Con. 3P RFK1	
	4822 267 41213	Con. 4P eco duo	
	4822 267 40699	Con. 4P (PD1)	
▲	4822 267 41208	Con. 4P (0045)	
	4822 265 30378	Con. 4P (0048)	
	4822 265 30899	Con. 5P (0053)	
	4822 267 30546	Con. 6P	
	4822 265 40252	Con. 7P RFK1	
	4822 290 40295	Con. 7P (0049)	
	4822 265 40818	Con. 8P (0056)	
▲	4822 267 60243	Con. 21P Scart	
	4822 492 71655	Spring fix. IC7157	
	4822 492 11528	Spring fix. IC7401, IC7402	
	4822 492 70871	Spring fix. IC7422	
	4822 492 70871	Spring fix. IC7504	
▲	4822 256 92053	Fuse holder (1501)	
	4822 256 91918	LED holder	
	4822 404 31451	Bracket fix. IR receiver	
	4822 402 10524	Tuner bracket (extended)	
	4822 404 31452	Tuner bracket	
	4822 402 10178	Interface bracket (TV cap)	
1001	4822 210 10715	Tuner FL2477/85 PLL	
1015	4822 242 70936	Filter 38.9MHz OFWJ1952M	
1015▲	4822 242 72197	Filter 38.9MHz OFWK2950M	
1015	4822 242 81388	Filter 38.9MHz OFWG1961M	
1015	4822 242 81737	Filter 38.9MHz OFWG1965M	
1032	4822 242 72211	Filter 5.5MHz (TPS)	
1032	4822 242 81712	Filter 5.5MHz (TPWA04B)	
1033	4822 153 30025	Filter 6MHz (TFS)	
1033	4822 242 81301	Filter 6.5MHz ((TPS)	
1033	4822 242 81572	Filter 6MHz (TPS)	
1101	4822 242 81423	Filter 38.9MHz OFWL9453M	
1135	4822 242 70714	Filter 5.5MHz	
1135	4822 242 71841	Filter 6.0MHz	
1136▲	4822 242 10316	Filter 6.5MHz	
1136	4822 242 71713	Filter 6.0MHz	
1501▲	4822 070 33152	Fuse3.15A	
1502▲	4822 252 51185	Fuse 630mA	
1679	4822 242 10328	X-tal 8MHz	
1685	4822 212 30842	IR receiver	
1701	4822 242 81246	X-tal 27MHz	

⊣⊢

2001	4822 124 40201	1000µF 20% 16V	
2007▲	4822 126 12944	47nF 10% 50V	
2008	5322 122 32967	5.6pF 10% 63V	
2010	4822 126 10326	180pF 5% 63V	
2011	5322 122 32661	56pF 5% 50V	
2012	4822 124 42058	33µF 20% 50V	
2013	5322 122 31944	3.9pF 5% 50V	
2014	5322 126 10343	1.8pF 5% 63V	
2015	4822 124 81029	100µF 20% 25V	
2016▲	4822 126 10002	100nF 20% 25V	
2017▲	4822 124 41579	10µF 20% 50V	
2018	5322 122 32661	56pF 5% 50V	
2022▲	4822 126 10002	100nF 20% 25V	
2023	4822 124 80791	470µF 20% 16V	
2025	4822 124 40763	2.2µF 100 V	
2025	4822 124 40769	4.7µF 20% 100V	
2030	4822 126 13482	470nF 80/20% 16V	
2034▲	4822 126 12944	47nF 10% 50V	
2037	4822 126 13061	220nF 20% 25V	
2041▲	5322 126 10223	4.7nF 10% 63V	
2043▲	5322 126 10223	4.7nF 10% 63V	
2044▲	5322 126 10223	4.7nF 10% 63V	
2045	4822 122 32139	12pF 2% 63V	
2045	4822 126 13689	18pF 1% 63V	
2050	4822 126 13296	100nF 10% 16V	
2053	4822 126 13296	100nF 10% 16V	
2080▲	5322 122 32654	22nF 10% 63V	
2082	4822 124 40763	2.2µF 100 V	
2084	4822 126 13296	100nF 10% 16V	
2101▲	5322 126 10223	4.7nF 10% 63V	
2104	4822 124 11529	16V 47U 20%	
2109	4822 121 41738	270nF 5% 63V	
2112	4822 122 33891	3.3nF 10% 63V	
2113	4822 122 33891	3.3nF 10% 63V	
2117▲	5322 126 10223	4.7nF 10% 63V	
2120	4822 122 33175	2.2nF 20% 50V	
2120	4822 122 33891	3.3nF 10% 63V	
2122	4822 122 33175	2.2nF 20% 50V	
2122	5322 122 31865	1.5nF 10% 63V	
2123	4822 122 31644	2.2nF 10% 63V	
2124▲	4822 124 41579	10µF 20% 50V	
2125▲	5322 122 32654	22nF 10% 63V	
2126	4822 124 40769	4.7µF 20% 100V	
2127	4822 124 40763	2.2µF 100 V	
2128	5322 122 32531	100pF 5% 50V	
2129▲	4822 124 41579	10µF 20% 50V	
2152	4822 124 40763	2.2µF 100 V	
2153	5322 122 32531	100pF 5% 50V	
2154	4822 122 33175	2.2nF 20% 50V	
2155	5322 121 42661	330nF 5% 63V	
2156	4822 126 13061	220nF 20% 25V	
2158▲	5322 126 10223	4.7nF 10% 63V	
2161	4822 124 40201	1000µF 20% 16V	
2162	4822 122 33575	220pF 5% 50V	
2163	4822 124 40756	1µF 20% 100V	
2169	4822 122 33515	82pF 5% 63V	
2170▲	4822 122 33177	10nF 20% 50V	
2171▲	5322 126 10223	4.7nF 10% 63V	
2180▲	4822 124 41579	10µF 20% 50V	
2194	4822 122 33175	2.2nF 20% 50V	
2196	4822 124 80927	3.3uF 20% 50V	
2197▲	4822 126 12944	47nF 10% 50V	
2198▲	4822 126 12944	47nF 10% 50V	
2239	4822 126 13296	100nF 10% 16V	
2248▲	4822 124 41579	10µF 20% 50V	
2261	4822 122 33891	3.3nF 10% 63V	
2262▲	4822 126 10002	100nF 20% 25V	
2265	4822 126 13689	18pF 1% 63V	
2267	4822 126 13296	100nF 10% 16V	
2268	4822 121 42408	220nF 5% 63V	
2271▲	5322 122 32654	22nF 10% 63V	
2272▲	5322 122 34123	1nF 10% 50V	
2273▲	5322 122 34123	1nF 10% 50V	
2274	4822 126 13296	100nF 10% 16V	
2275	4822 126 13296	100nF 10% 16V	
2279	4822 126 13296	100nF 10% 16V	
2280	4822 126 13296	100nF 10% 16V	
2290	4822 126 13296	100nF 10% 16V	
2291▲	4822 122 33177	10nF 20% 50V	
2292▲	4822 122 33177	10nF 20% 50V	
2293▲	4822 122 33177	10nF 20% 50V	
2295	4822 124 40756	1µF 20% 100V	
2297	4822 124 41751	47µF 20% 50V	
2298	5322 122 32452	47pF 5% 63V	
2340	5322 121 42386	100nF 5% 63V	
2345	4822 126 13473	220nF 80-20% 50V	
2350▲	5322 126 10223	4.7nF 10% 63V	
2351	4822 124 40756	1µF 20% 100V	
2354	4822 126 13473	220nF 80-20% 50V	
2366▲	4822 122 33177	10nF 20% 50V	
2370	4822 124 40756	1µF 20% 100V	
2371▲	5322 122 32654	22nF 10% 63V	
2400	5322 122 32268	470pF 10% 50V	
2401	4822 124 41334	470µF 20% 35V	
2401	4822 124 80065	1000µF 20% 50V	
2402	4822 124 40243	1.5µF 20% 63V	
2402	4822 124 40756	1µF 20% 100V	
2404▲	4822 126 12944	47nF 10% 50V	
2405	4822 122 33175	2.2nF 20% 50V	
2415	4822 121 41922	22nF 10% 250V	
2415▲	4822 121 42004	10nF 10% 400V	
2420	4822 121 10513	7.5nF 1KV 5%	
2420	4822 121 10514	1KV 10N 5%	
2421	4822 121 51319	1µF 10% 63V	
2422▲	4822 121 42365	330nF 5% 250V	
2422▲	4822 121 42376	470nF 5% 250V	
2423▲	4822 126 12269	680pF 10%R(HR) 2KV	
2424	4822 124 42105	1000µF 20% 50V	
2424	4822 124 80064	680µF 20% 50V	
2425	4822 124 80064	680µF 20% 50V	
2426	4822 124 80676	4.7µF 20% 160V	
2427	5322 121 42489	33nF 5% 250V	
2428	4822 121 51319	1µF 10% 63V	
2429	5322 121 42661	330nF 5% 63V	
2430	4822 121 42047	180nF 10% 250V	
2431▲	5322 126 10223	4.7nF 10% 63V	
2432▲	4822 122 33893	18nF 10% 63V	
2500	4822 126 13597	330pF 10% 500V	
2501▲	4822 126 11524	1.5nF 10% 1KV	
2502	4822 121 43856	4.7nF 5% 250V	
2503	5322 121 42489	33nF 5% 250V	
2505▲	4822 126 14037	2.2nF 20% 250V	
2506	4822 121 43343	4.7nF 10% 400V	
2507▲	4822 121 10512	275V 220N 20%	
2508▲	4822 126 11141	2.2nF 10% 1KV	
2509▲	4822 126 11141	2.2nF 10% 1KV	
2510▲	4822 121 42004	10nF 10% 400V	
2511	4822 124 41596	22µF 20% 50V	
2512	4822 124 40201	1000µF 20% 16V	
2513	4822 126 13694	68pF 1% 63V	
2514	4822 124 40201	1000µF 20% 16V	
2515	4822 124 81257	47µF 50/10% 200V	
2516	4822 124 11532	47µF 400V 20%	
2516	4822 124 11831	68µF 20% 400V	
2517▲	5322 122 34123	1nF 10% 50V	
2518	5322 122 32452	47pF 5% 63V	
2519▲	4822 126 11141	2.2nF 10% 1KV	
2520▲	4822 126 11141	2.2nF 10% 1KV	
2521▲	4822 124 12126	10µF 20% 400V	
2522	4822 126 13599	3.3nF 10% 500V	
2525	5322 121 42386	100nF 5% 63V	
2526	4822 124 40201	1000µF 20% 16V	
2526▲	4822 124 40433	47µF 20% 25V	
2527	4822 126 13597	330pF 10% 500V	
2528	4822 121 42408	220nF 5% 63V	
2529	4822 124 40756	1µF 20% 100V	
2531	5322 121 42498	680nF 5% 63V	
2532	4822 124 40201	1000µF 20% 16V	
2533	4822 124 40201	1000µF 20% 16V	
2534	4822 124 81029	100µF 20% 25V	
2535	5322 121 42386	100nF 5% 63V	
2536	5322 121 42498	680nF 5% 63V	
2537	4822 124 41596	22µF 20% 50V	
2538	5322 121 42489	33nF 5% 250V	
2539▲	4822 124 40433	47µF 20% 25V	
2540	4822 121 42408	220nF 5% 63V	
2602▲	4822 124 41579	10µF 20% 50V	
2604▲	4822 124 41579	10µF 20% 50V	
2615	5322 122 32531	100pF 5% 50V	
2623	4822 124 40756	1µF 20% 100V	
2624	4822 124 40769	4.7µF 20% 100V	
2625	4822 122 32535	680pF.10% 63V	
2629	4822 124 40763	2.2µF 100 V	
2630	4822 124 40763	2.2µF 100 V	
2651	4822 122 32535	680pF 10% 63V	
2658	4822 126 13694	68pF 1% 63V	
2662	4822 122 33175	2.2nF 20% 50V	
2663▲	5322 126 10223	4.7nF 10% 63V	
2666	4822 124 40255	100µF 20% 63V	
2667	5322 122 32531	100pF 5% 50V	
2668	4822 124 40255	100µF 20% 63V	
2669	5322 122 32448	10pF 5% 50V	
2676	5322 122 32452	47pF 5% 63V	
2677	5322 122 32448	10pF 5% 50V	
2678	5322 122 32448	10pF 5% 50V	
2680	5322 122 32658	22pF 5% 50V	
2681	5322 122 32658	22pF 5% 50V	
2682	4822 126 13061	220nF 20% 25V	
2682	5322 122 32531	100pF 5% 50V	
2685	4822 124 81029	100µF 20% 25V	
2686	4822 126 13482	470nF 80/20% 16V	
2689	4822 122 32535	680pF 10% 63V	
2701	5322 122 33244	8.2pF 5% 50V	
2702	4822 122 32504	15pF 2% 63V	
2703	5322 126 10511	1nF 5% 50V	
2704▲	4822 126 10002	100nF 20% 25V	
2705▲	4822 126 10002	100nF 20% 25V	
2706▲	4822 124 41579	10µF 20% 50V	
2707	4822 126 13296	100nF 10% 16V	
2711▲	4822 126 10002	100nF 20% 25V	
2715▲	4822 126 10002	100nF 20% 25V	
2732	4822 126 13296	100nF 10% 16V	
2734▲	4822 124 41579	10µF 20% 50V	
2752▲	4822 124 40433	47µF 20% 25V	
2848▲	4822 124 41579	10µF 20% 50V	
2849	5322 122 32268	470pF 10% 50V	
2850	4822 122 33575	220pF 5% 50V	
2852	4822 122 33575	220pF 5% 50V	
2860▲	5322 126 10223	4.7nF 10% 63V	
2863	5322 126 10794	220pF 5% 63V	
2877	4822 126 13061	220nF 20% 25V	

⊣□⊢

3001▲	4822 052 10278	2Ω7 5% 0.33W	
3005	4822 051 10102	1k 2% 0.25W	
3008	4822 051 20399	39Ω 5% 0.1W	
3009	4822 051 20399	39Ω 5% 0.1W	
3010	4822 051 20829	82Ω 5% 0.1W	
3011	4822 051 20154	150k 5% 0.1W	
3012▲	4822 051 20332	3k3 5% 0.1W	
3014	4822 117 11449	2k2 1% 0.1W	
3016	4822 051 10102	1k 2% 0.25W	
3017	4822 117 10833	10k 1% 0.1W	
3018	4822 051 20333	33k 5% 0.1W	
3020	4822 116 52231	820Ω 5% 0.5W	
3021	4822 101 11204	4.7k 30%	
3022	4822 051 20822	8k2 5% 0.1W	
3023	4822 051 20182	1k8 5% 0.1W	
3030	4822 116 52175	100Ω 5% 0.5W	
3031	4822 051 20331	330Ω 5% 0.1W	
3032▲	4822 051 20121	120Ω 5% 0.1W	
3032	4822 117 10353	150Ω 1% 0.1W	
3033	4822 051 20182	1k8 5% 0.1W	
3035	4822 051 20104	100k 5% 0.1W	
3036	4822 051 20104	100k 5% 0.1W	
3043	4822 117 10833	10k 1% 0.1W	
3044	4822 117 10833	10k 1% 0.1W	
3049	4822 051 20683	68k 5% 0.1W	
3051	4822 051 10102	1k 2% 0.25W	
3100	4822 051 20154	150k 5% 0.1W	
3100	4822 051 20184	180k 5% 0.1W	
3110	4822 051 20331	330Ω 5% 0.1W	
3110	4822 051 20391	390Ω 5% 0.1W	
3111	4822 051 20561	560Ω 5% 0.1W	
3112	4822 051 20822	8k2 5% 0.1W	
3115	4822 116 83883	470Ω 5% 0.5W	
3116	4822 117 11449	2k2 1% 0.1W	
3117	4822 117 10833	10k 1% 0.1W	
3118	4822 117 10833	10k 1% 0.1W	
3119	4822 117 10833	10k 1% 0.1W	
3120	4822 117 10833	10k 1% 0.1W	
3121	4822 051 10104	100k 2% 0.25W	
3124▲	4822 052 10109	10Ω 5% 0.33W	
3125	4822 117 11149	82k 1% 0.1W	
3126	4822 116 52289	5k6 5% 0.5W	
3127	4822 051 20223	22k 5% 0.1W	
3134▲	4822 053 11339	33Ω 5% 2W	
3134▲	4822 053 11479	47Ω 5% 2W	
3134	4822 053 11569	56Ω 5% 2W	
3141▲	4822 051 10472	4k7 2% 0.25W	
3142	4822 116 83864	10k 5% 0.5W	
3143	4822 051 20223	22k 5% 0.1W	
3144	4822 116 52264	27k 5% 0.5W	
3145	4822 051 20224	220k 5% 0.1W	
3146	4822 116 52234	100k 5% 0.5W	
3147	4822 050 11002	1k 1% 0.4W	
3148	4822 051 20224	220k 5% 0.1W	
3149	4822 051 20223	22k 5% 0.1W	
3150	4822 116 52269	3k3 5% 0.5W	
3151	4822 051 10332	3k3 2% 0.25W	
3152	4822 117 11139	1k5 1% 0.1W	
3153	4822 117 10833	10k 1% 0.1W	
3154	4822 051 20273	27k 5% 0.1W	
3154	4822 051 20562	5k6 5% 0.1W	
3155▲	4822 051 20332	3k3 5% 0.1W	
3156	4822 051 20182	1k8 5% 0.1W	
3157	4822 051 10102	1k 2% 0.25W	
3158	4822 116 83864	10k 5% 0.5W	
3159	4822 051 20822	8k2 5% 0.1W	
3163	4822 116 52283	4k7 5% 0.5W	
3164	4822 117 11449	2k2 1% 0.1W	
3165▲	4822 051 10103	10k 2% 0.25W	
3169	4822 116 83864	10k 5% 0.5W	
3170	4822 116 83884	47k 5% 0.5W	
3171	4822 117 11449	2k2 1% 0.1W	
3172	4822 051 10102	1k 2% 0.25W	
3173	4822 117 10833	10k 1% 0.1W	
3198	4822 050 26808	6Ω8 1% 0.6W	
3243	4822 117 10833	10k 1% 0.1W	
3245	4822 051 20223	22k 5% 0.1W	
3246	4822 117 10833	10k 1% 0.1W	
3248	4822 117 10833	10k 1% 0.1W	
3259	4822 051 20182	1k8 5% 0.1W	
3284	4822 116 52202	82Ω 5% 0.5W	
3285	4822 116 52202	82Ω 5% 0.5W	
3286	4822 116 52202	82Ω 5% 0.5W	
3291▲	4822 051 20008	0Ω jump	
3292	4822 117 10833	10k 1% 0.1W	
3293	4822 051 20822	8k2 5% 0.1W	
3294	4822 051 20104	100k 5% 0.1W	
3295▲	4822 051 10103	10k 2% 0.25W	
3296	4822 116 83872	220Ω 5% 0.5W	
3297	4822 117 10353	150Ω 1% 0.1W	
3298	4822 117 10353	150Ω 1% 0.1W	
3299	4822 117 10353	150Ω 1% 0.1W	
3332	4822 116 83878	270k 5% 0.5W	
3340	4822 051 20275	2M7 5% 0.1W	
3341	4822 051 20125	1M2 5% 0.1W	
3342	4822 050 11002	1k 1% 0.4W	
3345▲	4822 052 10151	150Ω 5% 0.33W	
3345▲	4822 052 10271	270Ω 5% 0.33W	
3351▲	4822 051 20153	15k 5% 0.1W	

Spare parts list / Stükliste / Liste des pièces

3353	4822 051 20474	470k 5% 0.1W
3354	4822 100 11483	10k 30% 0.1W
3368	4822 116 83884	47k 5% 0.5W
3369	4822 051 20224	220k 5% 0.1W
3370	4822 051 20684	680k 5% 0.1W
3400	4822 051 20333	33k 5% 0.1W
3401	4822 051 20154	150k 5% 0.1W
3402	4822 051 20681	680Ω 5% 0.1W
3402	4822 117 11454	820Ω 1% 0.1W
3403▲	4822 052 10689	68Ω 5% 0.33W
3404▲	4822 052 10158	1Ω5 5% 0.33W
3405▲	4822 052 11228	2Ω2 5% 0.5W
3405▲	4822 052 11478	4Ω7 5% 0.5W
3406	4822 053 10182	1k8 5% 1W
3407	4822 101 11376	220Ω pot.meter
3409	4822 051 10102	1k 2% 0.25W
3410	4822 051 20393	39k 5% 0.1W
3412	4822 117 11449	2k2 1% 0.1W
3415▲	4822 053 12279	27Ω 5% 3W
3415	4822 053 12399	39Ω 5% 3W
3417	4822 116 52272	330k 5% 0.5W
3419	4822 116 52303	8k2 5% 0.5W
3420	4822 116 83882	39k 5% 0.5W
3420	4822 116 83884	47k 5% 0.5W
3421	4822 116 52244	15k 5% 0.5W
3422	4822 117 11384	2k7 1% 0.1W
3423	4822 051 20561	560Ω 5% 0.1W
3424▲	4822 052 10109	10Ω 5% 0.33W
3425	4822 053 11129	12Ω 5% 2W
3426	4822 116 52289	5k6 5% 0.5W
3427▲	4822 052 11108	1Ω 5% 0.5W
3428▲	4822 052 11108	1Ω 5% 0.5W
3430	4822 052 10821	820Ω 5% 0.33W
3431▲	4822 052 11471	470Ω 5% 0.5W
3432	4822 051 20105	1M 5% 0.1W
3432	4822 051 20225	2M2 5% 0.1W
3433	4822 051 20393	39k 5% 0.1W
3434	4822 051 20223	22k 5% 0.1W
3436▲	4822 052 10151	150Ω 5% 0.33W
3437▲	4822 053 11103	10k 5% 2W
3440	4822 116 83868	150Ω 5% 0.5W
3500	4822 051 20331	330Ω 5% 0.1W
3500	4822 117 11504	270Ω 1% 0.1W
3501▲	4822 051 20101	100Ω 5% 0.1W
3502	4822 116 83864	10k 5% 0.5W
3503	4822 116 83864	10k 5% 0.5W
3504	4822 116 52219	330Ω 5% 0.5W
3505	4822 116 52213	180Ω 5% 0.5W
3506	4822 117 12094	0.33Ω 5%
3507▲	4822 050 21202	1k2 1% 0.6W
3507	4822 050 21502	1k5 1% 0.6W
3508	4822 053 10682	6k8 5% 1W
3509	4822 116 52271	33k 5% 0.5W
3510	4822 117 12096	22k 1%
3511▲	4822 053 10272	2k7 5% 1W
3512	4822 116 52297	68k 5% 0.5W
3513	4822 053 10334	330k 5% 1W
3514▲	4822 052 10108	1Ω 5% 0.33W
3515▲	4822 052 10108	1Ω 5% 0.33W
3516▲	4822 116 40137	PTC 36Ω 365V
3517▲	4822 051 20101	100Ω 5% 0.1W
3517	4822 117 11504	270Ω 1% 0.1W
3518	4822 117 12952	120k 5% 1W
3519	4822 051 20105	1M 5% 0.1W
3521	4822 117 11504	270Ω 1% 0.1W
3523▲	4822 052 10108	1Ω 5% 0.33W
3524▲	4822 052 11108	1Ω 5% 0.5W
3525	4822 053 11278	2Ω7 5% 2W
3525	4822 116 83876	270Ω 5% 0.5W
3526	4822 116 83883	470Ω 5% 0.5W
3527	4822 116 52271	33k 5% 0.5W
3528	4822 050 24702	4k7 1% 0.6W
3529	4822 116 83872	220Ω 5% 0.5W
3530	4822 050 23902	3k9 1% 0.6W
3531	4822 116 83883	470Ω 5% 0.5W
3532	4822 116 52231	820Ω 5% 0.5W
3533	4822 116 52228	680Ω 5% 0.5W
3534▲	4822 050 26801	680Ω 1% 0.6W
3535	4822 117 10833	10k 1% 0.1W
3536	4822 117 10965	18k 1% 0.1W
3537	4822 051 20104	100k 5% 0.1W
3538	4822 117 10833	10k 1% 0.1W
3539	4822 116 83872	220Ω 5% 0.5W
3540	4822 116 52207	1k2 5% 0.5W
3542▲	4822 053 11121	120Ω 5% 2W
3543	4822 117 10833	10k 1% 0.1W
3544	4822 117 11384	2k7 1% 0.1W
3545▲	4822 051 20471	470Ω 5% 0.1W
3546	4822 051 20182	1k8 5% 0.1W
3547	4822 117 10833	10k 1% 0.1W
3601	4822 116 52303	8k2 5% 0.5W
3602	4822 116 52303	8k2 5% 0.5W
3605	4822 117 10833	10k 1% 0.1W
3608▲	4822 051 20472	4k7 5% 0.1W
3612	4822 051 20223	22k 5% 0.1W
3615	4822 117 10834	47k 1% 0.1W
3617▲	4822 051 20472	4k7 5% 0.1W
3618	4822 051 10332	3k3 2% 0.25W
3619	4822 050 11002	1k 1% 0.4W
3620	4822 116 83864	10k 5% 0.5W
3621	4822 051 20223	22k 5% 0.1W
3621	4822 051 20333	33k 5% 0.1W
3623	4822 117 10833	10k 1% 0.1W
3624	4822 051 20104	100k 5% 0.1W
3625	4822 051 20333	33k 5% 0.1W
3628	4822 051 20333	33k 5% 0.1W
3630	4822 117 12345	360k 1% 0.1W
3631	4822 050 21504	150k 1% 0.6W
3632	4822 051 10102	1k 2% 0.25W
3648	4822 116 52195	47Ω 5% 0.5W
3649	4822 116 52195	47Ω 5% 0.5W
3650	4822 050 11002	1k 1% 0.4W
3651	4822 117 10833	10k 1% 0.1W
3652▲	4822 051 20472	4k7 5% 0.1W
3653▲	4822 051 20472	4k7 5% 0.1W
3654	4822 117 11449	2k2 1% 0.1W
3655	4822 117 11384	2k7 1% 0.1W
3656	4822 116 52283	4k7 5% 0.5W
3658	4822 117 11384	2k7 1% 0.1W
3659	4822 051 20182	1k8 5% 0.1W
3660	4822 116 52175	100Ω 5% 0.5W
3661	4822 050 11002	1k 1% 0.4W
3662	4822 051 20333	33k 5% 0.1W
3663	4822 117 10353	150Ω 1% 0.1W
3664	4822 051 20683	68k 5% 0.1W
3665	4822 051 20683	68k 5% 0.1W
3666	4822 116 83868	150Ω 5% 0.5W
3667	4822 116 83864	10k 5% 0.5W
3668	4822 051 20433	43k 5% 0.1W
3669	4822 117 10833	10k 1% 0.1W
3670	4822 116 83864	10k 5% 0.5W
3671▲	4822 051 10103	10k 2% 0.25W
3672	4822 117 11449	2k2 1% 0.1W
3673	4822 117 10833	10k 1% 0.1W
3674	4822 117 11449	2k2 1% 0.1W
3676	4822 116 83864	10k 5% 0.5W
3677	4822 117 11384	2k7 1% 0.1W
3678	4822 117 11149	82k 1% 0.1W
3679	4822 117 11449	2k2 1% 0.1W
3680▲	4822 051 20101	100Ω 5% 0.1W
3681▲	4822 051 20472	4k7 5% 0.1W
3682▲	4822 051 20101	100Ω 5% 0.1W
3683▲	4822 051 20101	100Ω 5% 0.1W
3684▲	4822 051 20332	3k3 5% 0.1W
3685▲	4822 051 20332	3k3 5% 0.1W
3691	4822 116 52234	100k 5% 0.5W
3694▲	4822 051 20472	4k7 5% 0.1W
3695▲	4822 051 20472	4k7 5% 0.1W
3696▲	4822 051 20472	4k7 5% 0.1W
3697▲	4822 051 20472	4k7 5% 0.1W
3698	4822 051 20333	33k 5% 0.1W
3702▲	4822 051 20332	3k3 5% 0.1W
3704	4822 051 20562	5k6 5% 0.1W
3705	4822 051 20273	27k 5% 0.1W
3706	4822 051 20331	330Ω 5% 0.1W
3707	4822 117 11449	2k2 1% 0.1W
3709	4822 051 20333	33k 5% 0.1W
3713	4822 051 20223	22k 5% 0.1W
3714	4822 117 10833	10k 1% 0.1W
3716	4822 117 10353	150Ω 1% 0.1W
3718	4822 117 10353	150Ω 1% 0.1W
3719	4822 117 11454	820Ω 1% 0.1W
3720	4822 050 11002	1k 1% 0.4W
3722▲	4822 051 20472	4k7 5% 0.1W
3723	4822 051 20333	33k 5% 0.1W
3724▲	4822 051 20332	3k3 5% 0.1W
3728	4822 117 10833	10k 1% 0.1W
3729	4822 117 11503	220Ω 1% 0.1W
3731▲	4822 051 20471	470Ω 5% 0.1W
3732	4822 051 10102	1k 2% 0.25W
3733	4822 051 10102	1k 2% 0.25W
3736	4822 117 10834	47k 1% 0.1W
3737	4822 051 10102	1k 2% 0.25W
3738	4822 117 10834	47k 1% 0.1W
3739	4822 051 20689	68Ω 5% 0.1W
3740	4822 051 20122	1k2 5% 0.1W
3740	4822 117 11139	1k5 1% 0.1W
3741	4822 051 20122	1k2 5% 0.1W
3741	4822 117 11139	1k5 1% 0.1W
3742	4822 051 20122	1k2 5% 0.1W
3742	4822 117 11139	1k5 1% 0.1W
3743	4822 117 10834	47k 1% 0.1W
3744	4822 117 11454	820Ω 1% 0.1W
3745	4822 116 52199	68Ω 5% 0.5W
3746▲	4822 051 20101	100Ω 5% 0.1W
3749	4822 053 10279	27Ω 5% 1W
3749	4822 116 52175	100Ω 5% 0.5W
3751	4822 117 11504	270Ω 1% 0.1W
3752▲	4822 051 20101	100Ω 5% 0.1W
3762▲	4822 051 20101	100Ω 5% 0.1W
3763▲	4822 051 20101	100Ω 5% 0.1W
3764▲	4822 051 20101	100Ω 5% 0.1W
3765▲	4822 051 20101	100Ω 5% 0.1W
3768	4822 116 52175	100Ω 5% 0.5W
3769▲	4822 051 20472	4k7 5% 0.1W
3770▲	4822 051 20472	4k7 5% 0.1W
3781	4822 051 10153	15k 2% 0.25W
3781	4822 051 10822	8k2 2% 0.25W
3786	4822 051 10102	1k 2% 0.25W
3788	4822 053 10279	27Ω 5% 1W
3788	4822 116 52175	100Ω 5% 0.5W
3850	4822 051 20562	5k6 5% 0.1W
3851▲	4822 116 83953	75Ω 5% 0.125W
3852	4822 051 20562	5k6 5% 0.1W
3853▲	4822 116 83953	75Ω 5% 0.125W
3855▲	4822 116 83953	75Ω 5% 0.125W
3860▲	4822 051 20471	470Ω 5% 0.1W
3862▲	4822 051 20471	470Ω 5% 0.1W
3863	4822 051 20223	22k 5% 0.1W
3864	4822 116 52289	5k6 5% 0.5W
3865▲	4822 116 83953	75Ω 5% 0.125W
3871	4822 117 11503	220Ω 1% 0.1W
3875▲	4822 116 83953	75Ω 5% 0.125W
3876	4822 051 10332	3k3 2% 0.25W
3878	4822 117 10965	18k 1% 0.1W
3879	4822 051 10473	47k 2% 0.25W
3880	4822 051 20562	5k6 5% 0.1W
3881	4822 117 10833	10k 1% 0.1W
3887▲	4822 051 20471	470Ω 5% 0.1W
3888	4822 117 11139	1k5 1% 0.1W
3889	4822 051 10751	750Ω 2% 0.25W
3890	4822 117 11507	6k8 1% 0.1W
3891	4822 117 10833	10k 1% 0.1W
3892	4822 116 52269	3k3 5% 0.5W
3895▲	4822 116 83953	75Ω 5% 0.125W
4xxx	4822 051 10008	0Ω 5% 0.25W

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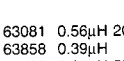
5010	4822 157 63081	0.56µH 20%
5010	4822 157 63858	0.39µH
5012	4822 157 53539	0.27µH 5%
5032	4822 157 53634	5.6µH 10%
5040	4822 157 71518	33mH
5040	4822 157 71522	38mH
5043	4822 157 71517	38mH
5195	4822 157 11213	22µH
5196	4822 157 11213	22µH
5415	4822 157 10359	33µH
5415	4822 157 71519	47µH 5%
5421	4822 157 11421	100µH 10%
5422▲	4822 140 10639	LOT (Line output transformer)
5424▲	4822 156 50097	Linearity coil
5500▲	4822 146 10461	Power trafo
5502▲	4822 146 10748	Power trafo
5503	4822 526 10494	Ferrite bead
5504	4822 157 53348	Choke
5505	4822 157 70826	2.4µH
5506	4822 157 50964	100µH
5509	4822 157 71915	5.6µH
5601▲	4822 157 51462	10µH
5671	4822 157 71703	82µH
5677	4822 152 20678	33µH
5701	4822 157 60141	3.3µH
5704	4822 157 60123	6.8µH

→|←

6007	4822 130 81227	BZV55-F5V6
6010	4822 130 42488	BYD33D
6042	4822 130 80888	BA682
6053▲	4822 130 30621	1N4148
6106	4822 130 34167	BZX79-B6V2
6112	4822 130 34167	BZX79-B6V2
6115	4822 130 80888	BA682
6116	4822 130 80888	BA682
6128	4822 130 80446	BAS32L
6141▲	4822 130 30621	1N4148
6150	4822 130 80446	BAS32L
6170	4822 130 80888	BA682
6171	4822 130 80888	BA682
6245▲	4822 130 30621	1N4148
6276	4822 130 80905	BZV55-F5V1
6289	4822 130 80446	BAS32L
6370	4822 130 82192	BZV55-C8V2
6420▲	4822 130 42489	BYD33G
6421	4822 130 42488	BYD33D
6422	4822 130 42488	BYD33D
6423▲	4822 130 32896	BYD33M
6424	5322 130 31938	BYV27-200
6426	4822 130 34145	BZX79-B39
6427	4822 130 42488	BYD33D
6500	4822 130 34233	BZX79-B5V1
6501▲	4822 130 34173	BZX79-B5V6
6502	4822 130 34281	BZX79-B15
6503	4822 130 42488	BYD33D
6504	4822 130 41487	BYV95C
6506	4822 130 70021	S1NB60
6507	5322 130 31938	BYV27-200
6508	4822 209 81397	TL431CLPST
6509	4822 130 80883	BZV55-C4V7
6510	4822 130 34197	BZX79-B12
6511	4822 130 34197	BZX79-B12
6514	5322 130 83584	BZT03-C130
6515	5322 209 12018	DF08M
6516▲	4822 130 32896	BYD33M
6517	5322 130 31932	BZT03-C200
6518	4822 130 42488	BYD33D
6519	5322 130 31938	BYV27-200
6520▲	4822 130 32715	SB340
6521	4822 130 42488	BYD33D
6522▲	4822 130 30621	1N4148
6523▲	4822 130 30621	1N4148
6524▲	4822 130 30621	1N4148
6540	4822 130 34197	BZX79-B12
6602	4822 130 82037	HZT33
6650	4822 130 34233	BZX79-B5V1
6651	4822 130 80905	BZV55-F5V1
6658▲	4822 130 30621	1N4148
6663	4822 209 72895	TLUV5320
6704	4822 130 82886	BZV55-B3V0
6705	4822 130 80446	BAS32L
6751	4822 130 81227	BZV55-F5V6
6849▲	4822 130 30621	1N4148
6850	4822 130 80446	BAS32L
6851	4822 130 80446	BAS32L
6852	4822 130 80446	BAS32L
6853	4822 130 80446	BAS32L
6854	4822 130 80446	BAS32L
6855	4822 130 80446	BAS32L
6865	4822 130 80446	BAS32L



7001▲	4822 209 80817	L7805CV
7015	4822 209 15106	TDA8361E/N5
7015	4822 209 15251	TDA8362E/N5
7030▲	5322 130 41982	BC848B
7103	5322 130 42755	BC847C
7125	4822 209 63105	TDA3843/V3
7126▲	5322 130 41982	BC848B
7127▲	5322 130 41982	BC848B
7140	5322 209 10576	HEF4053BD
7141▲	5322 130 41982	BC848B
7142▲	5322 130 41982	BC848B
7143▲	5322 130 41982	BC848B
7150▲	5322 130 41982	BC848B
7155▲	5322 130 41982	BC848B
7156▲	5322 130 41982	BC848B
7157	4822 209 32531	TDA7056A/N2
7170▲	5322 130 41982	BC848B
7243▲	5322 130 41982	BC848B
7250	4822 209 90129	TDA8395/N2
7271	4822 209 12635	TDA4665/V4
7400▲	4822 130 40981	BC337-25
7401	4822 130 40917	BD238
7402	4822 130 40823	BD139
7402	4822 130 44235	BD237
7420▲	4822 130 10025	CNX82A
7421	5322 130 44647	BC368
7422	4822 130 10206	BUT11AX
7423	5322 130 41983	BC858B
7500	5322 130 41983	BC858B
7501	4822 130 61675	BF487
7502	4822 130 41646	BF423
7503▲	4822 130 44197	BC558B
7504	4822 130 63725	STP4NA40FI
7505	5322 130 44349	BC635
7506▲	5322 130 41982	BC848B
7507	4822 130 40938	BC548
7508▲	4822 209 81726	MC7812CT
7509▲	4822 209 71634	TCDT1101G
7510	4822 209 15416	PWR-TOP200
7511▲	5322 130 41982	BC848B
7512	5322 130 41983	BC858B
7513	5322 130 41983	BC858B
7514	5322 130 41983	BC858B
7515	4822 130 40823	BD139
7516	5322 130 41983	BC858B
7540	4822 130 40937	BC548B
7600	4822 209 13653	TM87CM36N (SW2.5)
7600	4822 209 15648	TMP87PM36N (V1.6)
7654▲	5322 130 41982	BC848B
7657▲	5322 130 41982	BC848B

Spare parts list / Stükliste / Liste des pièces

7658▲	4822 209 73852	PMBT2369
7665▲	5322 130 41982	BC848B
7670▲	5322 130 41982	BC848B
7672▲	5322 130 41982	BC848B
7674▲	5322 130 41982	BC848B
7685	4822 209 32709	ST24C04FB1
7700	4822 209 90125	SAA5254/P/E/MIC
7702	5322 209 10357	HEF4066BP
7711▲	5322 130 41982	BC848B
7713▲	5322 130 41982	BC848B
7715▲	5322 130 41982	BC848B
7731	5322 130 41983	BC858B
7732▲	5322 130 41982	BC848B
7740▲	5322 130 41982	BC848B
7745▲	5322 130 41982	BC848B
7751▲	4822 130 41344	BC337-40
7856▲	5322 130 41982	BC848B
7857	5322 130 41983	BC858B
7858▲	5322 130 41982	BC848B
7875▲	5322 130 41982	BC848B
7876▲	5322 130 41982	BC848B

Smart Loader [A6A]

Various

	4822 212 10424	Smart Loader Panel
	4822 265 10457	Con. 8P F-pin (LM1)

3930	4822 116 83883	470Ω 5% 0.5W
3931▲	4822 052 10279	27Ω 5% 0.33W
3932▲	4822 052 10279	27Ω 5% 0.33W
3933▲	4822 052 10279	27Ω 5% 0.33W

7930	5322 209 10576	HEF4053BD

CRT Panel [B1]

Various

	4822 212 11573	CRT panel (14")
	4822 212 11574	CRT panel (21")
▲	4822 255 70261	CRT socket (21")
▲	4822 255 70306	CRT socket (14"), 8P m-neck
1371▲	4822 252 51175	Fuse 2.5A

2301	4822 124 80791	470µF 20% 16V
2304	5322 122 31863	330pF 5% 50V
2304	5322 126 10733	680pF 5% 50V
2324	4822 122 33216	270pF 5% 50V
2324	5322 116 80853	560pF 5% 63V
2344	5322 122 31863	330pF 5% 50V
2344	5322 126 10733	680pF 5% 50V
2373	4822 121 41926	33nF 5% 630V
2374	4822 124 81107	4.7µF 20% 250V

3300	4822 100 12226	2k2 30% LIN0.1W
3301	4822 116 83872	220Ω 5% 0.5W
3303	4822 116 52219	330Ω 5% 0.5W
3304	4822 116 52197	56Ω 5% 0.5W
3310	4822 100 12227	4k7 30% LIN0.1W
3311	4822 116 52207	1k2 5% 0.5W
3312	4822 116 52175	100Ω 5% 0.5W
3313	4822 116 83868	150Ω 5% 0.5W
3314▲	4822 053 11123	12k 5% 2W
3315	4822 050 21502	1k5 1% 0.6W
3316	4822 051 20562	5k6 5% 0.1W
3320	4822 100 12226	2k2 30% LIN0.1W
3321	4822 116 52222	390Ω 5% 0.5W
3322	4822 116 52243	1k5 5% 0.5W
3323	4822 051 20331	330Ω 5% 0.1W
3324	4822 116 52197	56Ω 5% 0.5W
3325	4822 051 20562	5k6 5% 0.1W
3330	4822 100 12227	4k7 30% LIN0.1W
3331	4822 116 52207	1k2 5% 0.5W
3333	4822 116 83868	150Ω 5% 0.5W
3334▲	4822 053 11123	12k 5% 2W
3335	4822 050 21502	1k5 1% 0.6W
3336	4822 116 52175	100Ω 5% 0.5W
3339▲	4822 053 11123	12k 5% 2W
3343	4822 051 20331	330Ω 5% 0.1W
3344	4822 116 52197	56Ω 5% 0.5W
3346	4822 100 12227	4k7 30% lin.1W
3347	4822 116 52207	1k2 5% 0.5W
3348	4822 116 83868	150Ω 5% 0.5W
3352	4822 116 52175	100Ω 5% 0.5W
3355	4822 050 21502	1k5 1% 0.6W
3357	4822 051 20562	5k6 5% 0.1W
3360	4822 117 11504	270Ω 1% 0.1W
3361▲	4822 051 20332	3k3 5% 0.1W
3362	4822 051 20681	680Ω 5% 0.1W
3363▲	4822 052 10109	10Ω 5% 0.33W
3371▲	4822 052 10228	2Ω2 5% 0.33W
3372▲	4822 052 10228	2Ω2 5% 0.33W
3373	4822 050 21502	1k5 1% 0.6W
3374	4822 050 21502	1k5 1% 0.6W

6310	4822 130 34174	BZX79-B4V7
6314▲	4822 130 42489	BYD33G
6330	4822 130 34174	BZX79-B4V7
6334▲	4822 130 42489	BYD33G
6350	4822 130 34174	BZX79-B4V7
6354▲	4822 130 42489	BYD33G
6355	4822 130 34382	BZX79-B8V2

7300	4822 130 40937	BC548B
7310	4822 130 41782	BF422
7320	4822 130 40937	BC548B
7330	4822 130 41782	BF422
7340	4822 130 40937	BC548B
7350	4822 130 41782	BF422
7360	5322 130 41983	BC858B

Clock Panel [E1]

Various

	4822 212 10525	Clock panel
	4822 267 41047	Con. 4P

2951▲	4822 126 10002	100nF 20% 25V
2952	4822 122 33498	2.7nF 10% 63V
2953	4822 124 81029	100µF 20% 25V

3951▲	4822 051 20101	100Ω 5% 0.1W
3952▲	4822 051 20101	100Ω 5% 0.1W
3953	4822 051 10101	100Ω 2% 0.25W
3954▲	4822 051 20101	100Ω 5% 0.1W

6951	4822 130 80312	TLHY4400
6952	4822 130 10212	TLHR4401

7951	4822 209 32304	SAA1064T
7952	4822 130 42615	BC817-40
7953	4822 130 42615	BC817-40
7954	4822 130 42615	BC817-40
7955	4822 130 42615	BC817-40
7956	4822 130 10213	LTS4801G
7957	4822 130 10213	LTS4801G
7958	4822 130 10213	LTS4801G
7959	4822 130 10213	LTS4801G

Radio Panel [E2]

Various

	4822 212 10426	Radio Panel
	4822 267 40722	Con. 6p (RP1)
	4822 264 40239	Con. 3P (RM1)
1910	4822 210 10725	Radio tuner

2901▲	4822 124 41579	10µF 20% 50V
2902▲	4822 124 41579	10µF 20% 50V
2903▲	4822 124 41579	10µF 20% 50V
2905▲	4822 124 41579	10µF 20% 50V

3901	4822 050 11002	1k 1% 0.4W
3902	4822 116 83884	47k 5% 0.5W
3903	4822 116 52238	12k 5% 0.5W
3904	4822 050 11002	1k 1% 0.4W
3905	4822 050 11002	1k 1% 0.4W
3906	4822 116 52269	3k3 5% 0.5W
3907	4822 116 83884	47k 5% 0.5W
3908	4822 116 52283	4k7 5% 0.5W

6901	4822 130 34167	BZX79-B6V2

7901	5322 209 10576	HEF4053BD
7902	4822 130 40937	BC548B